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ABSTRACT

Publications and presentations developed by the Human Resources Research Organization during 1972 and 1973 are listed. Part I of the bibliography contains reports issued during 1973; each citation gives the document title, author, and the contract under which the work was performed. Part II provides abstracts for each document included in Part I and, in addition, for documents which appeared during 1972. Documents are arranged under research code names or the types of research effort to which they relate; the code names and research efforts are listed alphabetically and within each group individual documents are ordered chronologically. Defense Documentation Center (DDC) numbers are given where appropriate, as are Publications Board (PB) numbers for items listed in the DDC's PB code. Items deposited in the Educational Resources Information Center (ERIC) or available through the National Technical Information Service (NTIS) are also identified by their appropriate system numbers. The bibliography contains materials dealing with training technology, organizational psychology and human factors engineering and is designed for use by persons working in those fields. (Author/PB)

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HumRRO

Human Resources Research Organization

Bibliography of Publications and Presentations During FY 1972-73

December 1973

HUMAN RESOURCES RESEARCH ORGANIZATION

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Human Resources Research Organization

Bibliography of Publications and Presentations During FY 1972-73

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300 North Washington Street
Alexandria, Virginia 22314

FOREWORD

The Human Resources Research Organization is a nonprofit research and development corporation whose purpose is to improve human performance, particularly in organizational settings, through behavioral and social science research, development, and consultation. HumRRO was established in 1951, as part of The George Washington University, from which it separated in 1969.

The chief product of HumRRO work is information; thus, reporting the results of research efforts is a major endeavor. To this end, this *Bibliography of Publications and Presentations During FY 1972-73* has been compiled. It complements the cumulative *Bibliography of Publications As of 30 June 1971*, which is a complete record of information about HumRRO research publications up to that time. The present volume supersedes the *Bibliography of Publications and Presentations During FY 1972*, published in October 1972.

HumRRO research and development work focuses on a wide range of training technology, organization psychology, and other human factors problems. HumRRO's research and development is done under research agreements with various departments of the Federal Government, with state and other government agencies, with private industry, and with foundations that are involved in human factors responsibilities.

Meredith P. Crawford
President
Human Resources Research Organization

DESCRIPTION OF THE BIBLIOGRAPHY

Purpose

This Bibliography lists the publications and presentations by the Human Resources Research Organization during FY 1973. In the annotated section, it also incorporates the material from the *Bibliography of Publications and Presentations During FY 1972*. It thus provides a complete record for FY 1972-73 for use in conjunction with the cumulative *Bibliography of Publications As of 30 June 1971*, which lists research reports issued since HumRRO's establishment in 1951.

Scope

In Part I, research reports issued by HumRRO during FY 1973 are listed; also listed are publications by staff members in professional journals and presentations at professional and military meetings. Contracts under which research efforts have been performed are identified.

In Part II, abstracts have been provided for the 1973 items listed in Part I and also for the FY 1972 items which appeared in last year's supplement to the cumulative *Bibliography* published in 1971.

AD numbers are included on those items that are available to qualified users through the Defense Documentation Center (DDC). PB numbers are included, as appropriate, for items listed in DDC under the Publications Board code. Items deposited in the Educational Resources Information Center (ERIC) are identified by ED numbers. Most of the items are available through the National Technical Information Service (NTIS), U.S. Department of Commerce.

Organization

Items are listed under the research code name (Work Unit or Research Project) or under the type of research effort other than Work Unit or Research Project to which they relate, such as Basic Research. A General section lists items that are not directly related to a specific research project or that are related to several efforts.

Code names for the research programs are listed alphabetically; in each code word group, items are listed chronologically. Within their sections, Exploratory Research and Basic Research efforts are listed sequentially by number, Technical Advisory Service and General publications by date.

If applicable, the listings include identification of the HumRRO Division at which the research was performed.

Appendices listing FY 1972-73 Technical Reports and Professional Papers by number, an author index, a sponsor index, and a subject index are included.

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Part I

List of Publications and Presentations During FY 1973

WORK UNITS AND RESEARCH PROJECTS

AIRSCOUT—Division No. 2
(Research for the Department of the Army)

Aeroscout Pilot and Aeroscout Observer Responses to the Air Cavalry Tactical Information Survey, by William L. Warnick and Warrant Officer Derryl Jones, Research Product RP-D2-72-5, 170 pp., September 1972 (AIRSCOUT I). AD 763 193

Combat Job Requirements for the Air Cavalry Aeroscout Pilot and Aeroscout Observer, by William L. Warnick, Technical Report 72-37, 68 pp., December 1972 (AIRSCOUT I). AD-755 505

APSTRAT—Division No. 3
(Research for the Department of the Army)

Development and Implementation of a Quality-Assured, Peer-Instructional Model, by Kenneth Weingarten, Jacklyn E. Hungerland, and Mark F. Brennan, Technical Report 72-35, 73 pp., November 1972. AD-753 601; ED-070 929

ATC-PERFORM
(Research for the Department of the Army)

Training Requirements for the Armor Crewman and Reconnaissance Specialist Advanced Individual Training Programs, by G. Gary Boycan and William L. Warnick, Consulting Report CR-D2-72-7, November 1972, AD 759 569

ATT-I—Division No. 3
(Research for the American Telephone and Telegraph Company)

The Development of Diagnostic and Remediation Materials for New-Hire Telephone Operators, by Hilton M. Bialek, Kenneth Weingarten, and Gary Goettelmann, Technical Report 72-24, 49 pp., August 1972. PB 213 137

CAMBCOM—Division No. 4
(Research for the Department of the Army)

Knowledge, Skills, and Thought Processing of the Battalion Commander and Principal Staff Officers, by Theodore R. Powers and Arthur J. DeLuca, Technical Report 72-20, 33 pp., July 1972. AD-748 832

COPE—Division No. 7 (Social Science)
(Research for the Department of the Army)

"A Cultural Self-Awareness Approach to Improving Intercultural Communication Skills," by Alfred J. Kraemer, paper for Annual Meeting of the International Studies Association, New York, March 1973; issued as Professional Paper 5-73, 16 pp., April 1973. AD-760 488 ED-079 213

COPY—Division No. 1 (System Operations)
(Research for the Xerox Corporation)

The Xerox Technical Representative: His Training, Support, Work and Rewards, by Robert C. Trexler, Patrick J. Butler, and Hugo F. Braden, Final Report FR-D1-73-2, 77 pp., March 1973.

DOLPHIN—Division No. 1 (System Operations)
(Research for the Department of the Navy, Strategic Systems Projects Office)

A Plan for ULMS Weapon System Maintenance and Its Personnel Implications, by Robert C. Trexler and Paul E. Loustaunau, Technical Report 72-36, 58 pp., November 1972. AD-753 816

DOT-MC—Division No. 1 (System Operations)
(Research for the Department of Transportation, National Highway Traffic Safety Administration)

"The Application of Systems/Task Analysis to the Identification of Driver Perception and Decision-Making Processes," by A. James McKnight, paper for Symposium, Organization for Economic Cooperation and Development, Rome, Italy, November 1972.

Educational Workshops—Division No. 5
(Research for the River Rouge, Michigan, School District)

"Inservice Training for a New Function for School Psychologists," by Edward W. Frederickson, William H. Melching, and Paul G. Whitmore, Professional Paper 15-72, 7 pp., July 1972; based on paper for Southwestern Psychological Association, San Antonio, Tex., May 1971.

Gain in Student Achievement as a Function of Inservice Teacher Training in Classroom Management Techniques, by Paul G. Whitmore, William H. Melching, and Edward W. Frederickson, Technical Report 72-26, 48 pp., October 1972. PB-213 074

ENDURE—Division No. 2
(Research for the Department of the Army)

"Effects of 48 Hours of Sustained Field Activity on Tank Crew Performance," by L.L. Ainsworth and H.P. Bishop, paper for American Psychological Association Convention, Honolulu, Hawaii, September 1972.

ERC—Division No. 7 (Social Science)
(Research for the Department of Labor, Manpower Administration)

Employment Assistance to Ex-Servicemen With Other Than Honorable Discharges: A Study of the Department of Labor's Exemplary Rehabilitation Certificate Program, Volume I. Report of the Study; Volume II. Verbatim Comments, Data Collection Instruments, and Related Materials, by Thurlow R. Wilson, Robert M. Madsen, and John A. Richards, Final Report, November 1972. PB-220 314/9 ED-078 154

ESPRIT—Division No. 2
(Research for the Department of the Army)

The Prediction of AWOL, Military Skills, and Leadership Potential, by Eugene H. Drucker and Shepard Schwartz, Technical Report 73-1, 43 pp., January 1973. AD-758 161 ED-074 342

FOLLOWTHRU—Division No. 3
(Research for the Department of the Army)

Role of Selection and Growth in Performance of Experienced Men: Some Evidence From a Study of Four Army Jobs by Elaine N. Taylor and Robert Vineberg, Technical Report 73-4, 24 pp., February 1973. AD-758 871

FORGE—Division No. 4
(Research for the Department of the Army)

The Effects of Command Position Upon Evaluations of Leader Behavior, by L.L. Lackey, Joseph A. Olmstead, and Harold E. Christensen, Technical Report 72-32, 27 pp., November 1972. AD-755 506 ED-070 902

IMPACT—Division No. 1 (System Operations)
(Research for the Department of the Army)

"Current Status of Computer-Administered Instruction Work Under Project IMPACT," by Robert J. Seidel, Professional Paper 18-72, 14 pp., July 1972, based on paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971. AD-752 099 ED-067 842

Project IMPACT Software Documentation: Overview of the Computer-Administered Instruction Subsystem, by John Stelzer and Jean Garneau, Technical Report 72-21, 36 pp., August 1972. AD-751 776 ED-067 883

Project IMPACT Software Documentation: II. The IMPACT Data Evaluation System—Version 2 (IDES-2), by Leslie Willis and John Stelzer, Research Product RP-D1-72-1, 120 pp., August 1972. AD-753 948

Project IMPACT Software Documentation: III. The IMPACT Data Evaluation System—Version 1 (IDES-1) by John Stelzer and Leslie Willis, Research Product RP-D1-72-2, 175 pp., August 1972. AD-753 949

Project IMPACT Software Documentation: IV. The Interface Subsystem Framework for Instructional Decision Modeling, by William Underhill and John Stelzer, Research Product RP-D1-72-3, 188 pp., August 1972. AD-753 950

Project IMPACT Software Documentation: V. File Activity Control System (FACS), by Leslie Willis, Jean Garneau, and John Stelzer, Research Product RP-D1-72-4, 60 pp., August 1972. AD-753 951

Project IMPACT Software Documentation: VI. Volume 1, Zeus Functions and Design Concepts, by Jean Garneau and John Stelzer, Research Product RP-D1-72-5, 90 pp., August 1972. AD-753 952

Project IMPACT Software Documentation: VI. Volume 2, Zeus Program Logic Descriptions, by Jean Garneau, William Underhill, and Doris Shuford, Research Product RP-D1-72-5, 144 pp., August 1972. AD-753 952

IMPACT *(Cont.)*

Project IMPACT Software Documentation: VII. IMPACT's Computer-Administered Instruction Software Subsystem, Coursewriter III, and Its Functions, by Doris Shuford and John Stelzer, Research Product RP-D1-72-6, 166 pp., August 1972. AD-753 953

Project IMPACT Software Documentation: VIII. Computer-Administered Instruction Computer Program Logic for COBOL2 Course of Instruction, by Douglas Spencer, Elizabeth Sowell, Leslie Willis, and Jean Garneau, Research Product RP-D1-72-7, 136 pp., August 1972. AD-762 445

LEADREVIEW—Division No. 4
(Research for the Department of the Navy, Office of Naval Research)

"Leadership and Social Exchange," by T.O. Jacobs, Professional Paper 17-72, 18 pp., July 1972, based on paper for NATO conference, Brussels, Belgium, August 1971. PB-213 211

LISTEN—Division No. 3
(Research for the Department of the Army)

"Learning by Listening," by Thomas G. Sticht, *Language Comprehension and the Acquisition of Knowledge*, Roy O. Freedle and John B. Carrol (eds.), © V.H. Winston & Sons, Inc.; issued as Professional Paper 21-72, 33 pp., November 1972. AD-755 601

MEDIA—Division No. 2
(Research for the Department of the Army)

"Theoretical Framework: Some Basic Issues Related to Methods and Media Selection," by Ronald W. Spangenberg, Professional Paper 4-73, 9 pp., February 1973, based on paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971. ED-074 741 AD-758 437

MODE—Division No. 7 (Social Science)
(Research for the Department of the Army)

A Comparison of Methods of Studying Illicit Drug Usage, by George H. Brown and Francis D. Harding, Technical Report 73-9, 48 pp., April 1973 (MODE I). AD-760 407

MODMAN—Division No. 5
(Research for the Department of the Army)

"Procedures for Implementing Soft-Skill Training in CONARC Schools," by John P. Fry, paper for CONARC Soft Skills Conference, Fort Bliss, Tex., December 1972.

"What Are Soft Skills?" by John P. Fry and Paul G. Whitmore, paper for CONARC Soft Skills Conference, Fort Bliss, Tex., December 1972.

NIGHTSIGHTS—Division No. 2
(Research for the Department of the Army)

Effects of Information Load, Location, and Mode of Observation on Detecting and Identifying Brief Targets, by Harold P. Bishop, Technical Report 72-30, 23 pp., October 1972 (NIGHTSIGHTS VI). ED-070 926

OFFICE-ED—Division No. 3
(Research for the Pacific Grove, California, Unified School District)

Development and Pilot Test of a Career-Oriented, Peer-Instructional Model in the Office Cluster of Business Occupations by Jacklyn E. Hungerland, Eugene R. Michaels, and John F. Taylor, Technical Report 72-28, 54 pp., October 1972. PB-213 136 ED-075 603

A Career-Oriented, Free-Flow, Peer-Instructional System, by Jacklyn E. Hungerland, Professional Paper 6-73, 11 pp., June 1973. PB-221 830

OSHA—Division No. 1 (System Operations)
(HumRRO Safety Series Report)

Check List of Occupational Safety and Health Hazards, HumRRO Safety Series Report, 1 July 1972, 126 pp. (For sale at $3.50)

OSHA-COT—Division No. 1 (System Operations)
(Research for the Department of Labor, Occupational Safety and Health Administration)

Training Course for Compliance Safety and Health Officers, by A. James McKnight, Paul Loustaunau, and James D. Tschechtelin, Final Report D1-72-2, 67 pp., January 1972.

PREVENT—Division No. 2
(Research for the Department of the Army)

Educational Approaches to the Prevention of Non-Therapeutic Use of Drugs, by Richard E. Kriner, David C. Routenberg, and Carol L. Seabright, Technical Report 73-11, 75 pp., May 1973. ED 008 070

"A Look at Some Current Programs," by Carol L. Seabright, *Journal of Drug Education*, vol. 3, no. 2. Summer, 1973.

REACTION—Division No. 4
(Research for U.S. Environmental Protection Agency)

Public Attitudes Toward Hazardous Waste Disposal Facilities, by L.L. Lackey, T.O. Jacobs, and S.R. Stewart, Final Report D4-73-8, Contract No. 68-03-0156, 186 pp., June 1973. PB-223 638

READNEED—Division No. 3
(Research for the Department of the Army)

Methodologies for Determining Reading Requirements of Military Occupational Specialties, by John S. Caylor, Thomas G. Sticht, Lynn C. Fox, and J. Patrick Ford, Technical Report 73-5, 71 pp., March 1973. AD-758 872 ED-074 343

REALISTIC—Division No. 3
(Research for the Department of the Army)

"Project REALISTIC: Determination of Adult Functional Literacy Skill Levels," by Thomas G. Sticht, John S. Caylor, Richard P. Kern, and Lynn C. Fox, *Reading Research Quarterly*, vol. VII, Spring 1972, pp. 424-465; issued as Professional Paper 20-72, 43 pp., September 1972. AD-755 293

REALISTIC *(Cont.)*

"Effects of Speech Rate, Selection Difficulty, Association Strength and Mental Aptitude on Learning by Listening," by Thomas G. Sticht and Douglas R. Glasnapp, *The Journal of Communication*, vol 22, no. 2, June 1972, pp. 174-188; issued as Professional Paper 1-73, January 1973. AD-762 692

SKYFIRE—Division No. 5
(Research for the Department of the Army)

Attempts to Improve Visual Detection Through Use of Search Patterns and Optical Aids, by Robert D. Baldwin, Technical Report 73-3, 33 pp., February 1973. (SKYFIRE III) AD-758 056

SMMART—Division No. 2
(Research for the Department of the Army)

The State of Knowledge Pertaining to Selection of Cost-Effective Training Methods and Media, by Ronald W. Spangenberg, Yair Riback, and Harold L. Moon, Technical Report 73-13, 133 pp., June 1973. AD-763 194 ED-078 295

SOURCE—Division No. 4
(Research for the Department of Health, Education, and Welfare, Social and Rehabilitation Service)

"Working Papers No. 2—Organizational Structure and Climate: Implications for Agencies," by Joseph A. Olmstead, in *National Study of Social Welfare and Rehabilitation Workers, Work, and Organizational Contexts*, Department of Health, Education, and Welfare, Social and Rehabilitation Service (SRS), 73-05403, 187 pp., February 1973.

SPECTRA—Division No. 2
(Research for the Department of Labor, Manpower Administration)

Bibliography for Curriculum Development in Counseling Skills for the Helping Professions, by Carol L. Seabright, Research Product D2-72-4, August 1972.

Evaluation of a Special Counselor Training Program Conducted by the United States Training and Employment Service, Part I: Administrative and Training Procedures, by William L. Warnick and Willard H. Pratt, Precis—Final Report and Final Report, MEL 73-01A, Contract No. 43-1-014-51, October 1972 (Spectra I). PB 214 532/4

Evaluation of Special Counselor Training Program Conducted by the United States Employment Service, Part II: Job-Oriented Training and Assessment Model, by Ronald E. Kraemer, Samuel P. Hudson, Richard E. Kriner, and Donald F. Haggard, Precis—Final Report and Final Report, MEL 73-01B, Contract No. 43-1-014-51, November 1972 (Spectra II).

SPECTRUM—Division No. 3
(Research for the Department of the Army)

Aptitude Level and Performance on Intramodal and Intermodal Form Discrimination Tasks, by Gary Kress, Technical Report 73-7, 28 pp., March 1973. AD-758 874

Instructional Strategies for Training Men of High and Low Aptitude, by Hilton M. Bialek, John E. Taylor, and Robert N. Hauke, Technical Report 73-10, 38 pp., April 1973 (SPECTRUM III) AD-760 408

STOCK—Division No. 1 (System Operations)
(Research for the Department of the Army)

Self-Paced Advanced Individual Training (AIT) and Duty Assignment Procedures, by Harold Hunter and Harold Wagner, Technical Report 73-14, 37 pp., June 1973. AD 764 973

TRADE—Division No. 1 (System Operations)
(Research for the Ford Motor Company, Automotive Assembly Division)

Solid State Equipment Maintenance and Training Requirements, Phase I: Establishing the Data Base, by Robert C. Trexler, Consulting Report CR-D1-72-1, 163 pp., September 1972.

TRAINMAN—Division No. 2
(Research for the Department of the Army)

"Developing Performance Tests for Training Evaluation," by William C. Osborn, Professional Paper 3-73, 8 pp., February, 1973, based on paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971. AD-758 436 ED-077 934

TYPETRAIN—Division No. 3
(Research for the Department of the Army)

An Evaluation of Alternative Programs for Training Beginning Typists in the Army, by Morris Showel, Technical Report 72-33, 106 pp., November 1972. AD-755 501 ED-070 922

UTILITY—Division No. 3
(Research for the Department of the Army)

Performance in Four Army Jobs by Men at Different Aptitude (AFQT) Levels: 3. The Relationship of AFQT and Job Experience to Job Performance, by Robert Vineberg and Elaine N. Taylor, Technical Report 72-22, 144 pp., August 1972. AD-750 603 ED-072 110

Performance in Four Army Jobs by Men at Different Aptitude (AFQT) Levels: 4. Relationships Between Performance Criteria, by Robert Vineberg and Elaine N. Taylor, Technical Report 72-23, 35 pp., August 1972. AD-750 604

"The Interchangeability of Job Sample Tests and Job Knowledge Tests in Four Army Jobs," by Robert Vineberg and Elaine N. Taylor, paper for American Psychological Association Convention, Honolulu, Hawaii, September 1972.

VOLAR—Division No. 3
(Research for the Department of the Army)

Attitudinal Studies of the VOLAR Experiment: Permanent Party Personnel, 1971, by S. James Goffard, James S. DeGracie, and Robert Vineberg, Technical Report 72-25, 228 pp., August 1972. AD-752 103

"Need Functioning at Four Stages in Military Service," by Elaine N. Taylor, Robert Vineberg, S. James Goffard, and James S. DeGracie, paper for American Psychological Association Convention, Honolulu, Hawaii, September 1972.

Attitudinal Studies of the VOLAR Experiment: Men in Training, 1971, by S. James Goffard, James S. DeGracie, and Robert Vineberg, Technical Report 72-31, 162 pp., October 1972. AD-753 599

Attitudinal Studies of the VOLAR Experiment: A Longitudinal Study, 1971-72, by S. James Goffard, James S. DeGracie, and Robert Vineberg, Technical Report 73-6, 23 pp., March 1973. AD-758 873

Exploratory Research
(Research for the Department of the Army)

Exploratory Research 79—Division No. 1 (System Operations)

Reduction of Problems in Implementing and Utilizing Automatic Data Processing Systems in Logistics, by Francis L. Hibbits and C. Dennis Fink, Technical Report 72-27, 86 pp., October 1972. AD-905 207L

Exploratory Research 83—Division No. 5

Relationship of Education Level to Capabilities and Attitudes of Young Enlisted Men, by William H. Melching, David Orme-Johnson, Paul G. Whitmore, and William J. Given, Technical Report 72-29, 31 pp., October 1972. AD-753 597

Exploratory Research 88—Division No. 4

A Study of Factors Affecting Mine and Boobytrap Detection: Subject Variables and Operational Considerations, by Jeffery L. Maxey and George J. Magner, Technical Report 73-12, 44 pp., June 1973. AD-769 635

Basic Research Studies
(Research for the Department of the Army)

Basic Research 16—Division No. 5

"Rate of Apparent Magnification as a Cue to Distance: Laboratory Investigation," by William H. Ton, *Perceptual and Motor Skills*, vol. 35, 1972, pp. 283-288; issued as Professional Paper 19-72, August 1972. AD-755 599

Capabilities of Ground Observers to Locate, Recognize, and Estimate Distance of Low-Flying Aircraft, by Robert D. Baldwin, Technical Report 73-8, 50 pp., March 1973 (BR-16). AD-758 875

Basic Research 19—Division No. 6
Definition of Learning Variables

"Complex Intellect vs the IQ Test as a Predictor of Performance," by James W. Dees, paper for Mid-South Educational Research Association Convention, New Orleans, La., November 1972. ED-072 102

Technical Advisory Service
(Research for the Department of the Army)

Target Detection and Range Estimation, by James A. Caviness, Jeffery L. Maxey, and James H. McPherson, Technical Report 72-34, 41 pp., November 1972. (Div. 4) AD-753 600

Relationship Between Recognition Range and the Size, Aspect Angle, and Color of Aircraft, by Robert D. Baldwin, Technical Report 73-2, 18 pp., February 1973. (Div. 5) AD-758 870

General[1]

Frameworks for Measurement and Quality Control, by Eugene A. Cogan and J. Daniel Lyons. Professional Paper 16-72, 15 pp., July 1972, based upon presentation at the New York University First National Annual Training in Business and Industry Conference, New York, March 1972; paper by Eugene A. Cogan, " 'If It Exists, It Can Be Measured'—But How?" printed in *SRIS*, Summer 1973, ED-069 736

"The Army Officer as Behavior Manager," by John P. Fry, paper for American Psychological Association meeting, Honolulu, Hawaii, September 1972.

"Selection Testing for Job Proficiency: Some Illustrated Empirical Problems in Assessing Fairness," by John S. Caylor, paper for symposium at American Psychological Association Convention, Honolulu, Hawaii, September 1972.

HumRRO's Literacy Research for the U.S. Army: Progress and Prospects, by Thomas G. Sticht, John S. Caylor, Lynn C. Fox, Robert N. Hauke, James H. James, Steven S. Snyder, and Richard P. Kern, briefing, U.S. Continental Army Command, October 1972; issued as Professional Paper 2-73, 31 pp., January 1973. AD-758 435 ED-073 369

"Interactive Relationship Between Inquisitiveness and Student Control of Instruction," by John P. Fry, *Journal of Educational Psychology*, vol. 63, no. 5, October 1972; issued as Professional Paper 22-72, 9 pp., December 1972. PB-215 818

"The Process of Effecting Change in Medical Education," by William A. McClelland, invited address at 11th Annual Conference on Research in Medical Colleges, Miami Beach, Fla., November 1972.

"The Behavioral Model as a Tool for Analyzing 'Soft Skills'," by Paul G. Whitmore, paper for CONARC Soft Skills Conference, Fort Bliss, Tex., December 1972.

"Training Quality Control, the Evaluation of Leadership Skills," by T.O. Jacobs, paper for CONARC Soft Skills Conference, Fort Bliss, Tex., December 1972.

"Designing the Operator Into Highly Automated Systems," by Harry L. Ammerman and William H. Melching, *Instruments and Control Systems*, vol. 46, no. 3, March 1973.

[1] Items in this section either are not directly related to specific elements of the research program, or are related to several elements.

Part II

Annotated Bibliography of Publications and Presentations During FY 1972 and FY 1973

WORK UNITS AND RESEARCH PROJECTS

ACCOUNT—Division No. 1 (System Operations)

Analysis of Army Experience in Implementing a Mechanized Stock Accounting System (Research for the Department of the Army)

Training in Mechanized Stock Accounting Systems in Army Logistics, by Herbert B. Leedy, Technical Report 72-16, 135 pp., May 1972. AD-744 448 ED-064 619

Army experience with a small mechanized stock accounting system, the NCR 500, was studied with respect to personnel and training, in order to improve implementation of newer and more complex computer-based logistics systems. Officers and enlisted personnel in various duty positions connected with NCR 500 systems in four Far Eastern commands were interviewed. Data showed there had been a continual input of underskilled personnel into nearly all of the duty positions in the mechanized stock accounting system and at its major interfaces. Interviews indicated that efficiency would have been promoted by (a) integrating NCR 500 procedures and concepts with repair parts supply procedures and concepts, (b) a total systems approach to training, (c) upgrading the storage operation as well as the supporting stock accounting system, (d) assigning more well-qualified technical supply officers, and (e) training in the NCR 500 system for more noncommissioned officers with repair parts supply experience.

AIRSCOUT—Division No. 2

Training Requirements and Concepts for Air Cavalry Training (Research for the Department of the Army)

Aeroscout Pilot and Aeroscout Observer Responses to the Air Cavalry Tactical Information Survey, by William L. Warnick and Warrant Officer Derryl Jones, Research Product RP-D2-72-5, 170 pp., September 1972 (AIRSCOUT I). AD 763 193

A comprehensive survey questionnaire was administered to 14 aeroscout pilots and 15 aeroscout observers who had served in combat with Air Cavalry units. The objectives of the survey were to (a) examine the methods and techniques that have been used by Air Cavalry aeroscout personnel in Vietnam, (b) supplement existing knowledge of Air Cavalry operations, and (c) furnish a basis for training program development for the aeroscout pilot and aeroscout observer. Some major areas covered in the report are: flight skill requirements for Air Cavalry pilots, target detection and recognition, low level scouting techniques, map-reading skills, fire-support adjustment, reconnaissance operations, operating with tactical air, and airmobile operations. Responses indicate a need for a formal training program for the aeroscout pilot and aeroscout observer.

Combat Job Requirements for the Air Cavalry Aeroscout Pilot and Aeroscout Observer, by William L. Warnick, Technical Report 72-37, 68 pp., December 1972 (AIRSCOUT I). AD-755 505

The objectives of this research were to formulate and describe the skills and knowledges required for combat job performance for the aeroscout pilot and aeroscout observer in an Air Cavalry Unit, and to determine how much emphasis should be placed on each skill or knowledge area during training. Job inventory lists were administered to 14 combat-experienced aeroscout pilots and 15 aeroscout observers. The respondents judged each skill or knowledge item in terms of its importance for job performance in combat. This information provides a basis for organizing content and subject emphasis of formal training programs, and provides school personnel and field commanders with a basis for evaluation and development of such.

APSTRAT–Division No. 3

Training Strategies Appropriate to Different Aptitude Levels for Selected Training Courses (Research for the Department of the Army)

"APSTRAT Action Briefing CONARC," by Howard McFann, Kenneth Weingarten, SFC Robert Anderson, and Paul Crick, briefing for CONARC, Fort Monroe, Va., June 1971.

This briefing was a preliminary report on the test of the APSTRAT instructional model as applied to a Field Wireman Course. Reported findings include improved trainee proficiency, fewer recycles, fewer academic drops, and no difference in achievement among different aptitude levels. Savings of approximately $260 per course graduate were made over the cost of conventional training. Evaluations of the model from the viewpoints of the test course personnel and the proponent agency are also presented.

"Individualized Instruction: A Peer-Instructional Approach," by Kenneth Weingarten, paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971.

This paper discusses the issues of individualized instruction on the basis of HumRRO's experience with the APSTRAT instructional model. The discussion includes the developmental history of Work Unit APSTRAT; the strengths and weaknesses of an alternative media approach to individualization; the development of a peer-instructional model; a description of the operation of the model; the technique of phasing-in the model in an ongoing course; and the importance of rigorous quality control. The paper concludes with an analysis of the relationship of the model to the central concerns of individualized instruction.

Development and Implementation of a Quality-Assured, Peer-Instructional Model, by Kenneth Weingarten, Jacklyn E. Hungerland, and Mark F. Brennan, Technical Report 72-35, 73 pp., November 1972. AD-753 601; ED-070 929

This report describes the development and pilot testing of a low-cost, generalizable, quality-assured, peer-instructional model suitable to the training needs of men of varying measured aptitude. The report presents a brief overview of the project, followed by a detailed description of the APSTRAT model and the considerations that led to its development. The model is discussed in terms of the instructional principles incorporated and the practical constraints accommodated. The data comparing the performance proficiency, academic attrition and recycles, and costs of the conventional and APSTRAT systems indicate that APSTRAT students achieve greater proficiency with a reduction in the rate of academic attrition and a considerable savings in cost.

ASAP–Division No. 1 (System Operations)

Manpower Development Program for Managers of Model Alcohol Safety Projects (Research for the Department of Transportation, National Highway Safety Board)

The Development of a Training Workshop and Handbook for Directors of Alcohol Safety Action Projects (ASAPs), by A. James McKnight, Bert B. Adams, and Ernest E. Personeus, (HumRRO IR-D1-71-3), Department of Transportation Contract No. DOT-HS-003-1-003, Final Report, September 1971.

This report describes the development of a training workshop and a handbook for Directors of Alcohol Safety Action Projects (ASAPs). The heart of the development activity was an analysis of the Project Director's job tasks using available NHTSA policy and procedures, information gained from directors of existing ASAPs, and a study of project director functions in related areas. From the results of the task analysis a specification of knowledges and skills required of project directors was prepared. This specification served as the basis for preparation of content for a written handbook and a workshop training program for prospective project directors. The handbook is entitled *Handbook for Project Directors, Alcohol Safety Action Projects*. The content of the workshop is described in the *Proceedings of Management Workshop for Alcohol Safety Action Project Leaders* and in the *Instructor's Guide for Management Workshop, Alcohol Safety Action Project*. An ancillary part of the project was the development of a proposal guide entitled *Guidebook for Proposal Development, Alcohol Safety Action Projects*.

ATC-PERFORM

Review, Evaluation, and Refinement of Performance Training in Army Training Centers (Research for the Department of the Army)

Training Requirements for the Armor Crewman and Reconnaissance Specialist Advanced Individual Training Programs, by G. Gary Boycan and William L. Warnick, Consulting Report CR-D2-72-7, November 1972. AD 759 569

Work Unit ATC-PERFORM was designed to assist the Army in the review, evaluation, and refinement of performance-based training in Basic Combat Training (BCT), Advanced Individual Training (AIT), and Combat Support Training (CST) programs. A combined working group was established to study all MOS-related subjects taught in AIT-Armor and AIT-Reconnaissance programs. This report summarizes the results of the first of three phases of a plan of work being implemented by this group. In this phase, job-related tasks addressed in the AIT programs were examined and tentative proficiency levels established.

ATT-I—Division No. 3

The Development of Diagnostic and Remediation Materials for New-Hire Operators (Research for the American Telephone and Telegraph Company)

The Development of Diagnostic and Remediation Materials for New-Hire Telephone Operators, by Hilton M. Bialek, Kenneth Weingarten, and Gary Goettelmann, Technical Report 72-24, 49 pp., August 1972. PB 213 137

A Toll Operator's job requires accessing information on routing telephone calls and billing from tables contained in a "Multi-Leaf." To solve training and job performance problems, HumRRO undertook development of a diagnostic and remediation program for use with newly hired operators. The emerging program stressed job-relevant performances, combined individual pacing and task mastery as the criterion for progression to the next training task, and used backward conditioning. In tryout, all 16 operators trained under the new program achieved criterion performance while none of 16 operators trained by conventional means did so. Trial in several telephone companies indicated the program was effective in a field setting and was useful as a quality control-remediation device for experienced operators. It is concluded that the program can serve as a useful training program and also as a prototype for programs on other aspects of the operator's job.

AUTOSPAN—Division No. 7 (Social Science)

Development and Evaluation of a Self-Instructional Method for Learning a Foreign Language (Research for the Department of the Army)

"Development and Evaluation of a Self-Instructional Spanish Course," by George H. Brown, paper for XVIIth International Congress of the International Association of Applied Psychology, Liege, Belgium, July 1971; issued as Professional Paper 21-71, 8 pp., October 1971. AD-735 052 ED-057 705

This paper describes the development and evaluation of a self-instructional Spanish course designed to produce an elementary communication skill, sufficient to cope with routine situations. The course has 106 printed lessons and associated tapes. There are two novel pedagogic techniques designed to simulate the experience of using the language in a live conversational situation: simulated tutoring lessons and simulated conversation lessons. Nine military personnel with no prior Spanish training completed the course in an average of 73.7 hours. Average scores on the final examination were: 73%, 85%, and 78%. Results establish the feasibility of building self-instructional foreign language courses to teach useful, elementary, communication skill.

AVCAD—Division No. 1 (System Operations)

Study of Training Improvements

(Research for the Department of Transportation, Federal Aviation Administration)

A Study of Training Program Improvements—Volume I: Findings and Analyses; Volume II: Recommendations for Improvement, by Alan G. Hundt, Robert C. Trexler, and Patrick J. Butler, (HumRRO-FR-D1-72-1), Department of Transportation Contract No. DOT-FA71WA-2687, Final Report, February 1972.

An analysis was made of the Federal Aviation Administration's Air Navigation Facilities Maintenance Training Program. The analysis included: (a) study of the overall training philosophy; (b) comparison of specific instructional activities with the kinds of instructional activities that should be carried on in order to meet the training outcomes required by maintenance concepts; (c) study of the criteria and standards governing the purchase and installation of equipment at the Academy for maintenance training purposes; (d) evaluation of the effectiveness of various teaching methods used to produce the training outcomes required in courses. Documents on the training system were collected and, where documentation was not appropriate for the collection of information, data collection instruments were constructed for the purpose of assessing the adequacy of the instructional system. Conclusions and detailed recommendations pertaining to the improvement of the training program are made.

BUCKEYE—Division No. 3

The Validation of a Set of Occupational Clusters for Use in the Comprehensive Career Educational Model (CCEM)

(Research for The Ohio State University)

An Occupational Clustering System and Curriculum Implications for the Comprehensive Career Education Model, by John E. Taylor, Ernest K. Montague, and Eugene R. Michaels, Technical Report 72-1, 80 pp., January 1972. PB-210 089 ED-061 427

Design of a proposed occupational clustering system for the Comprehensive Career Education Model (CCEM) was to meet three general criteria: encompass most existing jobs, translate into an entire K-12 curriculum, and show clear advantages over other systems. Researchers examined existing clustering systems for relevance and possible adaptation; no one system met all the criteria, so a new clustering system was devised by synthesizing useful features of existing systems. The proposed system has two crucial dimensions—one stressing functions and contents of occupations, the other emphasizing status or levels of occupations. The proposed clustering system was planned to fulfill three instructional functions: inform students about the world of work, assist students in choosing a suitable career, and provide models to shape instructional objectives and learning experiences.

CAMBCOM—Division No. 4

Knowledges, Skills, and Thought Processes of the Battalion Commander and Primary Staff (Research for the Department of the Army)

Battalion Commander Combat Arms Maneuver Battalion, Identification of Knowledge and Skills and Investigation of Thought Processing, by Arthur J. DeLuca and Theodore R. Powers, Research By-Product RBP-D4-71-26, 1971. AD-731 365 ED-057 343

The knowledge, skills, and thought processing of battalion commanders representing the six types of U.S. Army maneuver battalions were analyzed. A task inventory was developed, using data collected worldwide from battalion commanders, who also ranked leadership objectives in their respective functional areas. Assessments reflect pressures on the commanders at the time they were questioned.

Knowledge, Skills, and Thought Processing of the Battalion Commander and Principal Staff Officers, by Theodore R. Powers and Arthur J. DeLuca, Technical Report 72-20, 33 pp., July 1972. AD-748 832

This report describes research accomplished to aid the U.S. Army Infantry School in its systems engineering of the Infantry Officers Advanced Course curriculum. The research focused on the identification of the knowledge and skills and the study of thought processing of the battalion commander and his four principal staff officers (S1, S2, S3, S4). A survey of these officer activities was conducted in over 80% of all combat maneuver battalions, and data produced by a simulated battalion CPX were analyzed. It was concluded that it is feasible to identify knowledge and skills for commanders and staff officers by conducting a systematic job analysis, to use this information in the systems engineering of a curriculum, and to initially investigate thought processing by using a CPX. However, in the latter case definitive results should be developed by further experimentation.

CONVAL—Division No. 3

Evaluation of Community Mental Health Consultation Services to Schools (Research for the Department of Health, Education, and Welfare, National Institute of Mental Health)

Preliminary Handbook on Procedures for Evaluating Mental Health Indirect Service Programs in Schools, by Ernest K. Montague and Elaine N. Taylor, Technical Report 71-18, 124 pp., August 1971. PB-210 091

This study was performed to develop methods and instruments for evaluating community mental health center (CMHC) programs of indirect service consultation to schools. Models for three types of consultation are presented—Staff Development—Client-Centered, Staff Development—Agency-Centered, and Project Development. Each model is designed in stages, with purpose, products, approach, and suggested measures for evaluating each stage. For the two Staff Development models, the evaluation instruments presented can, in some instances, be used directly, and in other instances will require adaptation to local circumstances. The instruments consist of questionnaires to determine consultant and consultee expectations for consultation and their final evaluations of outcomes; consultant logs; films of problem children and response guides; and tape record analysis together with instructions for using and analyzing these assessment instruments. An example of Project Development Consultation and its sample associated evaluation instruments are presented in detail.

COPE—Division No. 7 (Social Science)

Development of a Method for Training Military Personnel for Interaction With Foreign Nationals (Research for the Department of the Army)

"A Cultural Self-Awareness Approach to Improving Intercultural Communication Skills," by Alfred J. Kraemer, paper for Annual Meeting of the International Studies Association, New York, March 1973; issued as Professional Paper 5-73, 16 pp., April 1973. AD-760 488 ED-079 213

Communication between persons of differing cultural backgrounds can be hindered by culturally conditioned assumptions they make about each other's cognitions. An exercise was designed to reduce this effect through increased cultural self-awareness. Participants analyze video recordings of staged "excerpts" from intercultural dialogues that contain subtle signs of cultural influences in American society. The participants learn how to recognize such manifestations. The excerpts are grouped into sequences; each sequence shows several manifestations of the same cultural influence, while noncultural influences are varied from excerpt to excerpt.

COPY—Division No. 1 (System Operations)

Xerox Corporation Training Systems Analysis: Phase I (Research for the Xerox Corporation)

"The Xerox Technical Representative: His Training, Support, Work, and Rewards," by Robert C. Trexler, Patrick J. Butler, and Hugo F. Braden, Final Report FR-D1-73-2, 77 pp., March 1973.

This was a systems analysis study designed to detect, expose, and recommend solutions to problems. While the effort concentrated upon the technical representative, it also examined organizational structure, policies and procedures for their impact upon tech-rep performance. Since the tech reps' work is essentially electromechanical maintenance in nature, the study examined not only his actual performance but also characteristics of the structure supporting his work. The report describes the tech reps' work, training, rewards and support, and recommends actions designed to improve them in an integrated and systematic way.

DELTA—Division No. 7 (Social Science)

DoD Non-Therapeutic Drug Usage Survey and Results (Research for Advanced Research Projects Agency)

Preliminary Findings from the 1971 DoD Survey of Drug Use, by Allan H. Fisher, Jr., Technical Report 72-8, 70 pp., March 1972. AD-743 852

This report, Phase I of a project to study use of nontherapeutic drugs in the Armed Services, identifies demographic correlates of drug abuse. A stratified sample of 36,510 enlisted men, representative of the four Armed Services worldwide, answered a 73-item Survey of Drug Use. Reported use of drugs (Sep 70-Sep 71) was highest for Army personnel, who also reported the highest daily drug usage rates. Except for the Army, daily usage rates for drugs were less than 2%. Major correlates of daily narcotic use included age, rank, race, and military service. Nontherapeutic drug use is mainly reported by younger enlisted men, in the lower pay grades. Higher rates of drug use are reported by non-whites. Use of drugs as a civilian is positively related to drug use in the Service. Findings on drug acquisition, availability, sources of supply, and recognition of drug problems by admitted users are reported.

Analyses of Selected Drug-Related Topics: Findings From Interviews at Four Armed Service Locations, by Allan H. Fisher, Jr., Technical Report 72-9, 77 pp., March 1972. AD-743 853 ED-064 637

This report, Phase II of a project to study reasons for drug use, summarizes information on military job performance effects of drug use, and attitudes toward and knowledge of drug treatment and rehabilitation among servicemen. Major reasons given for the initial use of marijuana in the military were curiosity and enjoyment. Career and non-career enlisted men differed in attitudes toward drug use and drug abuse control. Awareness of local drug rehabilitation facilities was low; awareness of DoD and VA programs was higher.

DOLPHIN—Division No. 1 (System Operations)
Impact of Restructured Maintenance Process on ULMS Maintenance Personnel Factors
(Research for the Department of the Navy, Strategic Systems Projects Office)

A Plan for ULMS Weapon System Maintenance and Its Personnel Implications, by Robert C. Trexler and Paul E. Loustaunau, Technical Report 72-36, 58 pp., November 1972, based on Final Report, January 1971. AD-753 816

This report describes research performed to develop a plan for the maintenance process applicable to the Undersea Long Range Missile System (ULMS). The plan developed forestalls possible stresses in the acquisition, training, and utilization of maintenance personnel. Interviews were conducted with U.S. Naval Strategic Systems Projects Office (SSPO) personnel, weapon system contractors, and others in related service and civilian organizations and activities. Areas were found where effort can be placed in ULMS planning that should result in ameliorating stresses found in the earlier POLARIS/POSEIDON personnel system. These areas are: hardware, technical documentation, training and career development.

DOT-DE—Division No. 1 (System Operations)
Development of Driver Education Objectives: A Driving Task Analysis
(Research for the Department of Transportation, National Highway Traffic Safety Administration)

"Needed—Goals for Driver Education," by A. James McKnight, *Concepts*, vol. 4, no. 2, Spring—Summer 1971.

"The Development of Instructional Objectives for Driver Education Through Analysis of the Driver's Tasks," by A. James McKnight, paper for Symposium at Institute for Road Safety Research SWOV, Noordwijkerhout, The Netherlands, August 1971.

This paper describes a set of instructional objectives that may be used by driver educators to develop and evaluate their courses. The objectives were derived from a comprehensive and detailed analysis of the driver's tasks and an evaluation of their criticality to the safety and effectiveness of the highway transportation system. A knowledge and performance test was developed to assist driver educators in assessing the degree to which instructional objectives have been attained.

Driver Education Task Analysis: Task Analysis Methods, by A. James McKnight and Bert B. Adams, (DOT HS 800 368) Technical Report 72-13, 45 pp., April 1972. PB-197 688

This report describes a method used to analyze and evaluate the criticality of driver behaviors. To assure comprehensive identification of driving behaviors, an analysis was made of the total highway transportation system including the driver, vehicle, roadway, traffic, and natural environment. Each aspect of the system was examined to identify specific situations that drivers encounter and the appropriate responses. The behaviors arising out of the systems analysis were organized into groups of related behaviors or "tasks." The analysis was continued to assure the identification of specific driving responses and associated cues. A group of 100 traffic safety experts, selected from among driver educators, enforcement officers, license officials, and fleet safety personnel, were asked to evaluate the criticality of the 1700 identified behaviors to the safety and efficiency of the highway transportation system. The driving behaviors, together with their associated criticality indices and various items of supporting information gained through a survey of the driving literature, were entered into a set of driving task descriptions.

Driver Education Task Analysis: The Development of Instructional Objectives, by A. James McKnight and Alan G. Hundt, (DOT HS 800 370) Technical Report 72-14, 69 pp., April 1972. PB-202 248

This report describes the methods that were used to develop for driver education courses a set of instructional objectives, as well as an evaluation tool to measure their attainment. Both of these tools were based upon the results of a driving task analysis conducted in earlier research. Those driving behaviors considered so critical as to be required of all drivers were organized into a set of performance objectives and accompanying performance standards. A set of enabling objectives, describing the skills and knowledges required in carrying out performance objectives, was also prepared. The evaluation comprises three tests: (1) a Driving Fundamentals Test, an off-road test to measure basic skills involved in controlling motion of the vehicle, (2) a Driving Situations Test, a checklist of student responses to planned and unplanned real-world driving situations, and (3) a Driving Knowledge Test, 105 information items drawn from enabling objectives. Pilot testing at a high school established their feasibility of administration. Recommendations for additional development of the Driving Situations Test are given.

DOT-MC—Division No. 1 (System Operations)

Curriculum for Secondary School Driver and Traffic Safety Education (Research for the Department of Transportation, National Highway Traffic Safety Administration)

"The Application of Systems/Task Analysis to the Identification of Driver Perception and Decision-Making Processes," by A. James McKnight, paper for Symposium, Organization for Economic Cooperation and Development, Rome, Italy, November 1972.

The traditional systems- and driver-oriented concepts of driver training have fallen short of allowing any significant control over the driving process. Accordingly, the systems/task analysis process was used to analyze the U.S. highway transportation system and to identify the driver's tasks. Over 1,700 specific behavioral requirements imposed upon the driver were identified. Analysis of these data indicates that safe driving results more from the driver's perceptual habits and his ability to identify potentially hazardous situations, than from his decision-making or motor processes. In fact, the author questions just how much decision-making as such is actually involved in driving.

Educational Workshops—Division No. 5

(Research for the River Rouge, Michigan, School District)

The Process of Individualizing Instruction, by Paul G. Whitmore, William H. Melching, and Edward W. Frederickson, Professional Paper 8-72, 10 pp., April 1972. AD-743 156

This paper describes a series of summer workshops for in-service teacher training (Kindergarten, Grades 1, 2, and 3) in the application of techniques and procedures based on pupil mastery of individualized modules of instruction. Contingency reinforcement management methods were demonstrated and practiced in the attempt to change pupil behavioral responses. It is noted that a change to individualized instruction must begin with changes in teacher classroom management skills rather than changes in students, architecture, or materials.

"Inservice Training for a New Function for School Psychologists," by Edward W. Frederickson, William H. Melching, and Paul G. Whitmore, Professional Paper 15-72, 7 pp., July 1972, based on paper for Southwestern Psychological Association, San Antonio, Tex., May 1971. PB-212 874

Interest in the role of the school psychologist evolved as a result of a series of teacher inservice workshops developed and conducted by a HumRRO team in a school district in Michigan. Poor academic performance, student behavior, discipline, and low student motivation were the main problems under review. The approach in the workshops was based on the belief that the most effective solution to these problems would be through corrective changes in classroom practices of teachers; ultimate changes that are desired are in the behavior of the students, but they have

to be approached through change in the behavior of the teachers. The workshops focused on contingency management, instructional objectives, and mastery modules. A primary concern of the workshop team was that, to be effective, this program had to be followed on throughout the year so that a long-term view of its success could be realized.

Gain in Student Achievement as a Function of Inservice Teacher Training in Classroom Management Techniques, by Paul G. Whitmore, William H. Melching, and Edward W. Frederickson, Technical Report 72-26, 48 pp. October 1972. PB-213 074

This report evaluates the effects of special inservice training of a group of elementary teachers. The training program—a series of workshops plus immediate follow-on efforts—sought to increase achievement in students by changing instructional practices used by the teachers. For grades 2-7, students of program teachers gained almost twice as much on a standardized achievement test as did students of non-program teachers; differences in mean gain scores in reading and mathematics were both highly significant. For grades K-1, students of program teachers tended to have higher gain scores than students taught by non-program teachers, but the differences were small. No single factor appears to account for the enhanced student gains produced by program teachers. These gains were apparently due to the integration of workshop training, trial implementation, classroom observation, availability of teacher aides, and frequent guidance and assistance provided to teachers.

ENDURE—Division No. 2

Tank Crew Performance During Periods of Extended Combat (Research for the Department of the Army)

The Effects of a 48-Hour Period of Sustained Field Activity on Tank Crew Performance, by L.L. Ainsworth and H.P. Bishop, Technical Report 71-16, 109 pp., July 1971. AD-731 219 ED-055 257

A 48-hour field experiment was conducted to determine the effects of sustained activity on the performance of tank crews in communication, driving, surveillance, gunnery, and maintenance activities. Only moving surveillance and some driving activities showed statistically significant performance deterioration over a 48-hour period of work without sleep, but these decrements were not considered to be of practical significance. The experiment showed that the diurnal rhythm of the subjects did not affect performance significantly. The research indicates that changes in unit organization or tactical doctrine are not necessary to accomplish continuous operations. The results of the experiment support the broad conclusion that tank crews using present equipment can maintain operational proficiency during 48 hours of sustained activity.

"Effects of 48 Hours of Sustained Field Activity on Tank Crew Performance," by L.L. Ainsworth and H.P. Bishop, paper for American Psychological Association Convention, Honolulu, Hawaii, September 1972.

A field experiment was conducted to determine effects on tank-crew performance in communication, driving, surveillance, gunnery, and maintenance tasks, of sustained activity for 48 hours without sleep. Only moving surveillance and certain driving performances showed statistically significant performance decrements, and these were not of practical significance. Diurnal rhythm of the subjects did not affect performance significantly. The study indicated that continuous 48-hour operations can be accomplished without changes in unit organization or tactical doctrine, and supported the general conclusion that tank crews can maintain operational proficiency during 48 hours of sustained activity using presently existing equipment.

ERC–Division No. 7 (Social Science)
(Research for the Department of Labor, Manpower Administration)

Employment Assistance to Ex-Servicemen With Other Than Honorable Discharges: A Study of the Department of Labor's Exemplary Rehabilitation Certificate Program, Volume I. Report of the Study; Volume II. Verbatim Comments, Data Collection Instruments, and Related Materials, by Thurlow R. Wilson, Robert M. Madsen, and John A. Richards, Final Report, November 1972. PB-220 314/9 ED-078 154

Public Law 89-690 (1966) specifies that ex-servicemen with other than honorable discharges may document post-service good conduct and obtain an Exemplary Rehabilitation Certificate entitling them to special job help at public employment offices. The employment benefits of the Department of Labor's ERC program were studied. All 700 ERC holders and a sample of those who inquired about the ERC, but did not apply, were surveyed by mail. A few interviews were conducted with employers, program administrators, employment service personnel, men recently discharged with a general or other than honorable discharge, and representatives of organizations assisting veterans. The conclusions were that ERC holders have obtained few benefits in seeking and retaining employment. The ERC apparently brings no special job counseling, and holders are frequently reluctant to show it to employers. The program is generally unknown to employers and to employment service personnel. Applying for an ERC can subject the ex-serviceman to embarrassment, and may even damage his reputation in his community. Ex-servicemen often misinterpret the objective of the ERC and apply hoping that it will assist in discharge change rather than for job aid. Only 11% of ERC holders reported that the certificate has helped them to get a job.

ESPRIT–Division No. 2
Development of Methods for Improving Soldier Adjustment to the Army
(Research for the Department of the Army)

Reenlistment Intentions of Tank Commanders, by Eugene H. Drucker and Shepard Schwartz, Technical Report 72-17, 43 pp., May 1972. AD-743 854

A battery of tests was administered to 100 tank commanders in Grade E6, to determine factors involved in reenlistment decisions. Tests included a background information questionnaire, an attitude questionnaire, five personality scales, and measures of present and expected future need satisfaction. Subjects were divided into three groups according to their responses to a question dealing with their reenlistment intentions; to reenlist, not to reenlist, and undecided. The results indicate that expected incentive increases were important factors in the reenlistment decision, particularly expected increases in satisfaction of esteem needs and self-actualization needs. While there were significant differences between the groups in attitude toward the Army, it was impossible to determine from the data whether attitude was a cause of the reenlistment decision or a consequence of it. Of the personality scales, only the Socialization scale showed a relationship to reenlistment. Family life appeared to be an important factor in the reenlistment decision.

The Prediction of AWOL, Military Skills, and Leadership Potential, by Eugene H. Drucker and Shepard Schwartz, Technical Report 73-1, 43 pp., January 1973. AD-758 161 ED-074 342

During basic combat training, 2,072 enlisted men were classified as being either AWOL or Non-AWOL. Three hundred of these men were similarly classified after 90 days in their initial unit assignment. AWOL and Non-AWOL soldiers were then compared to determine whether certain factors could be used to predict which soldiers would go AWOL, or could predict ratings of acquired military skills and of leadership potential. The results indicate that AWOL and Non-AWOL subjects differed on personality, education, intelligence, aptitude, and military component. No differences were found in attitude toward the Army, race, or physical status. AWOL and Non-AWOL subjects differed in age during initial unit assignment, but only among 17- and 18-year-old soldiers during basic combat training. Only 19-year-old and older subjects differed in career orientation. In general, the same factors that were related to AWOL were related also to military skill and leadership potential.

FOLLOWTHRU–Division No. 3

Characteristics of Men Tested in Work Unit UTILITY Who Remain in the Army (Research for the Department of the Army)

Role of Selection and Growth in Performance of Experienced Men: Some Evidence From a Study of Four Army Jobs, by Elaine N. Taylor and Robert Vineberg, Technical Report 73-4, 24 pp., February 1973. AD-758 871

Use of data from an earlier study (UTILITY) provided information on the roles of growth and selection in the relatively better job performance by experienced men in four Army jobs (Armor Crewmen, General Vehicle Repairmen, Supply Specialists, and Cooks). The analysis involved the comparison of Job Sample test scores of inexperienced men (at the time of the prior study) who subsequently remained in the Army, a comparable group of inexperienced men who subsequently left the Army, and the experienced men who had been in their jobs at least 30 months at the time of the prior study. There was no clear evidence that selective factors contribute to the higher performance of experienced men. It was concluded that this better performance was attributable to their growth on the job.

FORGE–Division No. 4

Factors in Military Organizational Effectiveness (Research for the Department of the Army)

The Effects of Command Position Upon Evaluations of Leader Behavior, by L.L. Lackey, Joseph A. Olmstead, and Harold E. Christensen, Technical Report 72-32, 27 pp., November 1972. AD-755 506 ED-070 902

The study was designed to determine the effects of command position—battalion commander and company commander—upon evaluations of the desirability of certain leader actions. Twenty-two U.S. Army officers who had served as battalion commanders (Group I) and 22 who had served as company commanders (Group II) rated 36 leader actions on their desirability for battalion and for company commanders. Battalion commanders do not differentiate between the two command levels on the desirability of the leader actions. Company commanders differentiate about actions concerned with the centralization of authority and responsibility, and consider these to be more desirable for both command levels. Both groups rated positive motivation and emotional support as desirable and punitive or negatively motivating actions as slightly undesirable. The implications of the differences in expectations about leader behavior on effective organizational functioning, leadership doctrine, and training are discussed.

IMPACT–Division No. 1 (System Operations)

Prototypes of Computerized Training for Army Personnel (Research for the Department of the Army)

Project IMPACT—Computer-Administered Instruction: Preparing and Managing the Content of Instruction, IMPACT Text-Handling Subsystem, by The IMPACT Staff, Technical Report 71-21, 47 pp., September 1971. AD-732 863 ED-055 450

Project IMPACT is a comprehensive advanced development project designed to produce an effective and economical computer-administered instruction (CAI) system for the Army. This report describes the concepts, approach, and implementation of the Project IMPACT text-handling subsystem. The computer-based facilities for preparing, storing, and retrieving the content of CAI courses of instruction are described, as are CAI courses. Computer software tools are described in terms of their use by course authors.

"Current Status of Computer-Administered Instruction Work Under Project IMPACT," by Robert J. Seidel, Professional Paper 18-72, 14 pp., July 1972, based on paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971. AD-752 099 ED-067 842

With shrinking financial resources and a smaller, largely volunteer Army, demands made on personnel and the importance of each individual soldier will increase, posing difficult problems in training. The training must deal with widespread student differences, provide an increasing number of complex skills, and use even smaller numbers of skilled instructors. Computer-administered instruction (CAI) is a most promising approach, if it is developed as a comprehensive and total system. The goal of Project IMPACT is to provide an effective, efficient, and economical CAI system in a total system framework. This paper reviews the (a) reasons for establishment of Project IMPACT, (b) nature of the project and its relevance to needs of the Army, (c) reasons why the Army needs to develop its own capability in CAI, and (d) directions and prospects for delivery of specifications for an operational CAI system for the Army within the next two years.

Project IMPACT Software Documentation: Overview of the Computer-Administered Instruction Subsystem, by John Stelzer and Jean Garneau, Technical Report 72-21, 36 pp., August 1972. AD-751 776 ED-067 883

This overview of the IMPACT Computer-Administered Instruction Software Subsystem describes the rationale and motivation for the development of the software. A series of Research Products, available through information retrieval systems, will completely document the technical details of the software. In this overview, software subsystem components are identified and their interactions are described. The system is described in terms of real-time vs. off-line operations. Flowcharts are provided to show the general pattern of information processing within the system.

Project IMPACT Software Documentation: II. The IMPACT Data Evaluation System—Version 2 (IDES-2), by Leslie Willis and John Stelzer, Research Product RP-D1-72-1, 120 pp., August 1972. AD-753 948

The IMPACT Data Evaluation System—Version 2 (IDES-2) provides a storage, retrieval, and analysis capability for data generated in Project IMPACT's CAI environment. IDES-2 uses standard PL/1 techniques to perform the required storage, retrieval, and file maintenance activities. Statistical analysis in IDES-2 is provided through the Biomedical (BMD) statistical analysis package, augmented as required at Project IMPACT by especially prepared routines. IDES-2 provides extensive, standard reports summarizing student activity, which are used by authors to evaluate the effectiveness of the instructional material. IDES-2 reports are also used by IMPACT's research personnel to monitor student activity. As a result, IMPACT is able to develop increasingly more efficient instructional decision models. The storage and retrieval component in IDES-2 is documented in detail in this document. All IDES-2 reports, including the method through which each report is generated, and its contents are described, and examples of reports are provided

Project IMPACT Software Documentation: III. The IMPACT Data Evaluation System—Version 1 (IDES-1), by John Stelzer and Leslie Willis, Research Product RP-D1-72-2, 175 pp., August 1972. AD-753 949

This report describes the IMPACT Data Evaluation System—Version 1 (IDES-1); IDES-1 has two main components—storage/retrieval and analysis. The storage/retrieval component is used to update and maintain an extensive data base of Computer-Administered Instruction (CAI) generated data, as well as to retrieve selective data elements from the data base. The data are used for psychological research in learning, and for evaluating the instructional material. In IDES-1, the storage/retrieval function is performed through a list processor, SLIP. IMPACT's version of SLIP has been modified and extended for more efficient operation. The analysis function in IMPACT is intended to provide statistical analysis of data base subsets. This function is performed through the BMD statistical analysis package, augmented by specially prepared programs. This document describes in detail the storage and retrieval portion of IDES-1 (SLIP itself and the BMD package are not described).

Project IMPACT Software Documentation: IV. The Interface Subsystem Framework for Instructional Decision Modeling, by William Underhill and John Stelzer, Research Product RP-D1-72-3, 188 pp., August 1972. AD-753 950

The IMPACT Computer-Administered Instruction (CAI) software subsystem utilizes Coursewriter III as its primary vehicle for providing student instruction. IMPACT Coursewriter III instructional material is structured into divisions, with each division having one or more instructional modules. Each module has a Telling (T) section with Practice (P) subsection, and a Quiz (Q) section. A student may recapitulate any completed module, review his current module's T-section, or jump to the current module's practice or quiz sections. System-scheduled remediation is also provided for in IMPACT's instruction. The Interface controls all intermodule and intramodule transfers. It is used to assemble the appropriate label when a transfer is made. The label is returned to Coursewriter III and is used in a Coursewriter III branch instruction. Interface permits an author to specify, for each individual student, a separate and unique division and module structure. Thus, it also allows the author to specify an individual course for each student with the course components being drawn from a pool of instructional material.

Project IMPACT Software Documentation: V. File Activity Control System (FACS), by Leslie Willis, Jean Garneau, and John Stelzer, Research Product RP-D1-72-4, 60 pp., August 1972. AD-753 951

The Project IMPACT File Activity Control System (FACS) is an authoring aid used to assist in the development of instructional text. FACS provides printouts of textual elements in the exact format that they appear to the student on the cathode ray tube. FACS also provides printouts of logical units of instructional elements in compressed form. FACS allows an author to perform character string searches on the instructional text files in order to identify elements that contain specified character strings. Instructional elements can be stored with administrative data identifying the author of the text and the date of preparation. Generally, FACS prints this information with its reports and allows modification. This report describes the use and operation of the FACS system. Reports produced by FACS are also described.

Project IMPACT Software Documentation: VI. Volume 1, Zeus Functions and Design Concepts, by Jean Garneau and John Stelzer, Research Product RP-D1-72-5, 90 pp., August 1972. AD-753 952

This research product provides a description of Project IMPACT's time-sharing monitor, Zeus, which extends the capabilities of an IBM 360 or 370 computer system. Its functions, capabilities, structure, and operation are discussed. Zeus provides capabilities needed for real-time, interactive computer applications using cathode ray tube displays. This document is intended primarily for systems programmers, and is part of a series that will completely document the IMPACT software subsystem.

Project IMPACT Software Documentation: VI. Volume 2, Zeus Program Logic Descriptions, by Jean Garneau, William Underhill, and Doris Shuford, Research Product RP-D1-72-5, 144 pp., August 1972. AD-753 952

This research product provides a description of Project IMPACT's time-sharing monitor, Zeus, which extends the capabilities of an IBM 360 or 370 computer system. Its functions, capabilities, structure, and operation are discussed. Zeus provides capabilities needed for real-time, interactive computer applications using cathode ray tube displays. This document is intended primarily for systems programmers, and is part of a series that will completely document the IMPACT software subsystem.

Project IMPACT Software Documentation: VII. IMPACT's Computer-Administered Instruction Software Subsystem, Coursewriter III, and Its Functions, by Doris Shuford and John Stelzer, Research Product RP-D1-72-6, 166 pp., August 1972. AD-753 953

The computer-administered instruction (CAI) language component in Project IMPACT's CAI system is an IBM program product, Coursewriter III Version 2, which has been modified slightly at IMPACT. The modifications concern what data are recorded by Coursewriter III and how and when data are recorded. The modifications also provided for special handling of invalid sign-on attempts, and special processing of commands and symbols not normally recognized by Coursewriter III. IMPACT has also developed and has in use several Coursewriter III functions for

IMPACT *(Cont.)*

clearing counters and switches, for storing and loading buffers and counters, for special processing of buffers, for processing student response, for recording data, and for performing arithmetic computations on-line. This document provides detailed documentation on all Coursewriter III modifications made at IMPACT and on all Coursewriter III functions used at IMPACT.

Project IMPACT Software Documentation: VIII. Computer-Administered Instruction Computer Program Logic for COBOL2 Course of Instruction, by Douglas Spencer, Elizabeth Sowell, Leslie Willis, and Jean Garneau, Research Product RP-D1-72-7, 136 pp., August 1972. AD 762 445

This research product provides a detailed description of the computer program that controls the instructional logic for COBOL2, the IMPACT-developed course in the programming language COBOL. The program is written in the Coursewriter III, Version 2 language. Course structure, student options for modifying presentation of course material, and coding conventions are discussed. Also presented are the IMPACT-developed Coursewriter III macro instructions used in coding the course and the detailed instructions for computing scores on all quizzes. Partial Program listings for the entire course are included.

INGROUP–Division No. 4
Small-Group Instructional Methods for Military Training
(Research for the Department of the Army)

Handbook of Small-Group Methods of Instruction, by Joseph A. Olmstead, Research By-Product, RBP-D4-71-27, June 1971. AD-741 829

This handbook provides practical guidance for selecting and using the more common small-group methods of instruction. It stresses the methods and procedures for using the methods discussed, rather than presenting rationale for or against them. The methods can be adapted, depending on the nature of the students and the skills of the trainer.

LEADREVIEW–Division No. 4
The Development of a Comprehensive Review of Psychological and Sociological Literature on Organizational Leadership
(Research for the Department of the Navy, Office of Naval Research)

"Leadership and Social Exchange," by T.O. Jacobs, Professional Paper 17-72, 18 pp., July 1972, based on paper for NATO conference, Brussels, Belgium, August 1971. PB-213 211

This paper presents a definition of leadership in relation to power and authority and in terms of the impact of various types of influence attempts in formal organizations. The actions and reactions of superordinates and subordinates occur in terms of cultural values, group norms, and social responses derived from the social learning processes. Leadership is a type of role behavior that is learned and executed better by some than by others, depending upon the resources that they can apply to the attainment of group goals. Social exchange theory seems to provide a useful framework for analysis of the impact of superordinate influence attempts.

LISTEN–Division No. 3

Development of Automated Programs to Improve Listening Skills Required in Army Jobs
(Research for the Department of the Army)

"Learning by Listening," by Thomas G. Sticht, *Language Comprehension and the Acquisition of Knowledge*, Roy O. Freedle and John B. Carroll (eds.), © V.H. Winston & Sons, Inc.; issued as Professional Paper 21-72, 33 pp., November 1972. AD-755 601

Listening is discussed as the process of comprehending spoken language. Studies are described in relation to a simple model of the development of reading ability. Implications of the model for measuring reading and listening abilities are indicated, with emphasis on conceptual issues related to measuring outcomes following instruction in learning by listening. A rudimentary model of hierarchical features of spoken messages that may be used by a listener in tracking a message is described in relation to teaching listening. Research to explore means for reducing reading demands in training or job situations is discussed, one approach being the possibility of substituting learning by listening for learning by reading.

MARKSMAN–Division No. 4

Combat Marksmanship
(Research for the Department of the Army)

"Perspectives on Simulation and Miniaturization," by Michael R. McCluskey, paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971; issued as Professional Paper 14-72, 15 pp., June 1972. AD-748 082 ED-066 910

Training applications of simulation and miniaturization are examined, as are areas where research is needed to develop cost-effective simulation methodologies for training. In order for simulation and miniaturization techniques to reach maximum levels of effectiveness, systems analysis is needed to define physical and psychological dimensions, relationships, and aspects. Among the aspects of the system to be considered for simulation are equipment components, personnel, organization, system procedures and processes, input data, output data, and environment.

MARS–Division No. 7 (Social Science)

Research Studies and Analysis on Procurement, Utilization, Performance, Retention, and Separation of Military Personnel
(Research for the Department of Defense)

Patterns of Drug Usage Among Vietnam Veterans, by Allan H. Fisher, Jr., HumRRO; MAJ K. Eric Nelson, Medical Corps, U.S. Army; and CPT Jacob Panzarella, Medical Service Corps, U.S. Army, Professional Paper 12-72, 11 pp., May 1972. AD-743 162 ED-070 966

A factor analysis was performed on an intercorrelation matrix of reported drug usage frequencies for seven drug categories at two consecutive periods of time. Subjects were 1,010 Army Vietnam veterans in pay grade E6 or below, aged 26 years or less. Retrospective reporting identified drug usage prior to a tour of Vietnam and during the tour. Four factors were extracted: (a) chronic use of marijuana, both before Vietnam and during Vietnam; (b) general drug usage during the Vietnam assignment; (c) pre-Vietnam narcotics usage; (d) pre-Vietnam soft drug usage encompassing both amphetamines and barbiturates. Implications derived were: (a) Improved procedures for selection may be required to identify potential enlistees and Vietnam assignees with drug use problems. (b) Separate rehabilitation efforts may be required to treat successfully both long-term chronic drug users and men whose drug behavior was only recently acquired in Vietnam. (c) Additional analyses are required to study drug use experimentation in Vietnam to determine whether it leads to chronic use of narcotics.

MEDIA–Division No. 2

Improving Media Implementation in Army Training Programs (Research for the Department of the Army)

"Theoretical Framework: Some Basic Issues Related to Methods and Media Selection," by Ronald W. Spangenberg, Professional Paper 4-73, 9 pp., February 1973, based on paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971. AD-758 437 ED-074 741

The basic thrust of this presentation is that media and methods selections are theoretical and cannot be definitively set out. Circumstances, themselves, may suggest solutions in terms of available media or methods that can be used in particular situations. Theoretical framework can often act as an aid, suggesting or reminding of possible media and methods solutions.

MODE–Division No. 7 (Social Science)

Methods of Research Into Data Acquisition in Selected Social Problem Areas in the Military (Research for the Department of the Army)

A Comparison of Methods of Studying Illicit Drug Usage, by George H. Brown and Francis D. Harding, Technical Report 73-9, 48 pp., April 1973 (MODE I). AD-760 407

The purpose of this study was to compare the effectiveness of several methods of acquiring data on the nontherapeutic use of drugs. Data were collected by means of an anonymous questionnaire, a Randomized Inquiry technique, and a Card-Sort procedure. Subjects totaled approximately 1,100 enlisted men, noncommissioned officers, and junior officers, both Vietnam veterans and men without such experience. The sample was obtained from four Army posts between September and November, 1971. For enlisted men, the questionnaire and the Randomized Inquiry technique yielded substantially equivalent drug usage rates; for officers, the Randomized Inquiry technique yielded somewhat higher rates than the questionnaire. The Card-Sort procedure, as used here, was less effective as a method of collecting data on drug usage.

MODMAN–Division No. 5

Models for Systems Engineering of Man-Ascendant Jobs (Research for the Department of the Army)

"Procedures for Implementing Soft-Skill Training in CONARC Schools," by John P. Fry, paper for CONARC Soft Skills Conference, Fort Bliss, Tex., December 1972.

This paper describes seven characteristics of the problem-solving approach to soft-skill training in use in CONARC C-22 courses: a job function orientation; an experiential orientation; a simulation orientation; a cooperative-evaluation orientation; a functional context orientation; a small-group orientation; and a learning- and student-centered orientation. Various improvements, stemming from student reaction, are suggested, including: making behavioral objectives known; adopting a "guided" discovery instructional format; making it easier to acquire information; integrating additional process-based job functions into existing training goals; bringing behavioral scientists into the analysis of job functions; training students and instructors to use a problem-solving framework; and training administrators in OD skills.

"What Are Soft Skills?" by John P. Fry and Paul G. Whitmore, paper for CONARC Soft Skills Conference, Fort Bliss, Tex., December 1972.

A questionnaire developed to clarify the terms "hard" and "soft" skills was sent to representatives of CONARC schools. Based on the results, soft skills were defined as important job-related skills that involve little or no interaction with machines and whose application on the job is quite generalized. Army documents do not provide an adequate description of the behaviors, conditions, or standards associated with most of the job functions.

NIGHTSIGHTS—Division No. 2

Training Techniques for New Night Vision Devices (Research for the Department of the Army)

Effects of Information Load, Location, and Mode of Observation on Detecting and Identifying Brief Targets, by Harold P. Bishop, Technical Report 72-30, 23 pp., October 1972 (NIGHTSIGHTS VI). ED-070 926

The two experiments reported are part of a series evaluating effects of display parameters, task variables, and operator perceptual limitations on ability of Night Vision Device operators to process visual information quickly and accurately. For untrained observers, target brightness requirements were higher for identification than for detection, but were about equal for both responses with target exposure times greater than a critical time of 0.10 to 0.17 second. With shorter exposure times, the target brightness needed for detection or identification increased as exposure time decreased. Increasing information load and randomizing target location raised brightness requirements for identification. The results suggest that operator performance might be improved significantly by special training to increase the observer's area of attention and his capacity to process visual information.

NYSED-TO—Division No. 5

Qualitative Review of Terminal Objectives and Approximations in Reading (Research for the New York State Education Department)

"Evaluation of Terminal Objectives in Reading," by William H. Melching, paper for American Educational Research Association meeting, Chicago, Ill., April 1972. ED-061 274

OFFICE-ED—Division No. 3

Research to Develop a Model Instructional Program in the Office Cluster of Business Occupations (Research for the Pacific Grove, California, Unified School District)

Development and Pilot Test of a Career-Oriented, Peer-Instructional Model in the Office Cluster of Business Occupations, by Jacklyn E. Hungerland, Eugene R. Michaels, and John E. Taylor, Technical Report 72-28, 64 pp., October 1972. PB-213 136 ED 075 603

The purpose of this project was to develop an instructional model capable of producing high levels of student motivation and proficiency, using the office cluster of business occupations as a vehicle. A peer-instructional approach was used in developing the training system; elements emphasized were performance orientation, entry-level skill mastery, immediate feedback to students and teachers, individualization of instruction, heightened student motivation, high job relevance, and low cost. Fifteen job-instructional packets were developed, and seven were given a pilot test at Pacific Grove High School with promising results. A detailed plan for implementation and full evaluation was prepared as part of the report.

A Career-Oriented, Free-Flow, Peer Instructional System, by Jacklyn E. Hungerland, Professional Paper 6-73, 11 pp., June 1973. PB-221 830

This paper presents a description of a performance-oriented, self-paced, free-flow, peer-instructional, career-progression instructional system. The model system was developed for the office cluster of business occupations, but has relevance for other curricula. Incorporated in the model are definitive measures for quality control and accountability.

Organizational Factors–Division No. 4[1]
(Research for the Department of Health, Education, and Welfare, Social and Rehabilitation Service)

Organizational Factors in the Performance of Social Welfare and Rehabilitation Workers, by Joseph A. Olmstead, Technical Report 71-20, 50 pp., August 1971; reprinted from *Working Papers No. 1: National Study of Social Welfare and Rehabilitation Workers, Work, and Organizational Contexts*, Social and Rehabilitation Service, May 1971. AD-733 913

This report summarizes present state-of-knowledge on organizational factors related to performance of social welfare and rehabilitation workers. It is based on a survey of general organizational literature, literature dealing specifically with the performance of social welfare and rehabilitation workers, and on HumRRO experience in applying research findings. Included are an analysis of major theoretical approaches to the study of organizations, a discussion of concepts and findings that have particular relevance for social and rehabilitation agencies, implications for applied research concerned with organizational factors that influence performance, and implications for the management of social welfare and rehabilitation organizations.

OSHA-Division No. 1 (System Operations)
(HumRRO Safety Series Report)

Check List of Occupational Safety and Health Hazards, HumRRO Safety Series Report, 1 July 1972, 126 pp. (For sale at $3.50)

This handbook lists safety and health hazards that can result from violating standards set forth under the Occupational Safety and Health Act. It is intended to serve as an aid in recognizing hazards and as an index to the pertinent federal standards that are violated. The industries and parts of the Code of Federal Regulations covered are: 29 CFR 1910 General Industry; 29 CFR 1915 Ship Repairing; 29 CFR 1916 Ship Building; 29 CFR 1917 Shipbreaking; 29 CFR 1918 Longshoring; 29 CFR 1926 Construction.

OSHA-COT–Division No. 1 (System Operations)
(Research for the Department of Labor, Occupational Safety and Health Administration)

Training Course for Compliance Safety and Health Officers, by A. James McKnight, Paul Loustaunau, and James D. Tschechtelin, Final Report D1-72-2, 67 pp., January 1972.

This report describes revision of the Compliance Safety and Health Officers course for the Department of Labor, Occupational Safety and Health Administration. The CSHO's job was analyzed in depth, in accord with OSHA standards, policies, and procedures. A listing of over 1700 violations of OSHA standards was prepared, and specialists in occupational safety and health then evaluated each violation in terms of criticality based on likelihood of hazard, probability of effect, severity of effect, and range of effect. A set of "performance" and "knowledge" instructional objectives was then established, and a four-week course was developed including these features: (a) instruction paralleling sequence in which activities are performed; (b) an Instructor Manual having course guide and lesson plans; (c) a student handbook having a course outline, course objectives, and reference materials; (d) an intermingling of "compliance" and "standards" instruction; and (e) role-playing exercises to provide realistic practice for CSHOs in dealing with employers and employees.

[1] See also Project SOURCE.

PREDICT–Division No. 6 (Aviation)
Correlational Analysis of Aviator Performance
(Research for the Department of the Army)

"Multivariate Performance Prediction," by James Dees, paper for Southeastern Psychological Association Convention, Atlanta, Ga., April 1972.

This paper discusses development of a set of regression equations which the U.S. Army Primary Helicopter School could use in determining whether an individual should continue flight training or be eliminated from the program. An estimated probability of successful course completion can be computed, along with an estimated end-of-course grade and percentile ranking. On-going work includes attempts to predict aviator performance in combat on the basis of data bank information, whether an aviator will elect to remain in the service after his obligated tour of duty ends, and probability of aircraft accidents throughout an aviator's career.

PREVENT–Division No. 2
Military Educational Approaches to the Prevention of Non-Therapeutic Use of Drugs
(Research for the Department of the Army)

Educational Approaches to the Prevention of Non-Therapeutic Use of Drugs, by Richard E. Kriner, David C. Routenberg, and Carol L. Seabright, Technical Report 73-11, 75 pp., May 1973. ED 008 070

A set of guidelines for use in drug education programs was developed in a four-phase study of various aspects of drug usage and drug education. In Phase I of the study, a questionnaire on drug usage and related attitudes was developed and administered to 2,149 military personnel at Fort Knox, Kentucky. Phase II involved a review of 15 civilian drug education programs, their characteristics, and the suggestion of a model drug education program approach. Phase III was a brief review of psychological theory and research regarding attitude change. Based upon data and information obtained from the first three phases, 18 guidelines that can be useful in the conduct of a drug education program were formulated during Phase IV.

"A Look at Some Current Programs," by Carol L. Seabright, *Journal of Drug Education*, vol. 3, no. 2, Summer, 1973.

Drug abuse prevention programs have been proliferating across the country without much exchange of information. The author has reveiwed a number of drug abuse prevention programs outlining such aspects as the basic orientation and comprehensiveness of the programs and the audiences to whom the programs are directed. The review also covers the different individuals involved in the direction and presention of the program and their use of persuasive and educational techniques. The different types of training for those involved in the presentation are also reviewed. Some conclusions are presented about drug education programs based on opinions of drug education experts, and some suggestions are included for a model that could be formulated from the review.

REACTION–Division No. 4

Public Attitudes About Hazardous Wastes and Hazardous Waste Disposal Sites (Research for U.S. Environmental Protection Agency)

Public Attitudes Toward Hazardous Waste Disposal Facilities, by L.L. Lackey, T.O. Jacobs, and S.R. Stewart, Final Report D4-73-8, Contract No. 68-03-0156, 186 pp., June 1973. PB-223 638

This project had three purposes: (a) survey public attitudes toward a proposed system of national disposal sites (NDSs), (b) develop a behavioral model as a means of predicting citizens' reactions to an NDS in a particular location, and (c) propose an effective public information campaign. The national survey, sampling randomly and purposefully selected respondents (key influentials), was conducted in 10 counties selected as feasible NDS locations. The questionnaire elicited information about three classes of variables considered predictive of citizen reaction to an NDS—(a) contextural (physical/economic environment), (b) situational (social environment), and (c) individual (personal attitudes/beliefs), which constituted the basic structure of the behavioral model. Most respondents have positive attitudes toward an NDS, would accept one in their county, and believe an NDS would be beneficial to their area. About half wanted additional information before agreeing to a nearby NDS. Most respondents named the mass media (TV and local newspapers) as the greatest source of influence on their environmental and ecological attitudes. A generalized public information program designed to create public acceptance of NDSs is outlined.

READNEED–Division No. 3

Methodology for Evaluating Reading Requirements of Army Jobs (Research for the Department of the Army)

"Development and Evaluation of Job Reading Task Tests," by Thomas G. Sticht and John S. Caylor, paper for symposium at annual meeting of American Educational Research Association, April 1972. ED-064 683

Describes research to develop job reading task tests (JRTT) for three military jobs having civilian counterparts: cook, automotive repairman, and supply clerk. Relationships of general reading ability to performance on JRTT are described for men in three groups: an unselected sample, a group selected for special aptitude in a JRTT area, and a group both selected and trained in the JRTT area. Results indicate that, while general reading and JRTT performance are positively correlated, the JRTT are sensitive to selection and training, and hence are measures of special job-reading abilities as well as of general reading abilities.

Methodologies for Determining Reading Requirements of Military Occupational Specialties, by John S. Caylor, Thomas G. Sticht, Lynn C. Fox, and J. Patrick Ford, Technical Report 73-5, 71 pp., March 1973. AD-758 872 ED-074 343

READNEED research was concerned with the development of methodologies for determining reading requirements of Army MOSs. Three approaches for assessing MOS literacy demands are described: (a) analysis of readability of Army MOS materials using a newly developed readability formula calibrated on Army personnel and Army job materials; (b) use of information currently in Army data banks to study relationships between reading ability (estimated from AFQT) and job proficiency (indexed by the Primary Military Occupational Specialty/Evaluation Test); and (c) direct assessment of personnel reading skills in relation to proficiency on specially constructed Job Reading Task Tests (JRTT). Feasibility studies that indicate the relative merits of each approach, and certain conceptual and operational problems in determining literacy requirements of jobs are described.

"Development of a Simple Readability Index for Job Reading Material," by John S. Caylor and Thomas G. Sticht, paper for the annual meeting of the American Educational Research Association, New Orleans, Louisiana, February 1973.

The FORCAST readability index was developed to predict the reading grade level of Army technical job reading matter used to train young male soldiers. Based on a single variable—the number of one-syllable words per 150-word passage—the index has been compared with the Flesch and Dale-Chall general readability indices and found to be valid. Morever, FORCAST can be applied readily by clerical personnel without special training or equipment. The data it provides are realistic guides to matching a soldier's reading materials to his reading ability.

REALISTIC—Division No. 3

Determination of Reading, Listening, and Arithmetic Skills Required for Major Military Occupational Specialties
(Research for the Department of the Army)

Project REALISTIC: Evaluation and Modification of REAding, LIStening, and ArithmeTIC Needs in Military Jobs Having Civilian Counterparts, by Thomas G. Sticht, John S. Caylor, and Richard P. Kern, Professional Paper 19-71, 43 pp., September 1971; papers presented at Western Psychological Association meeting, Los Angeles, Calif., April 1970. AD-755 040 ED-057 334

The papers in this collection present a description of, and the results of, research in Work Unit REALISTIC. In addition to the first paper which is an overview, the three papers are: "Psychometric Determination of Relationships Among Literacy Skills and Job Proficiency," "Reading Ability, Readability, and Readership: Identifying Job-Related Reading Tasks Performed by Cooks, Clerks, and Mechanics,' and "Reducing Discrepancies Between Literacy Skill Levels of Personnel and Literacy Demands of Jobs."

Determination of Literacy Skill Requirements in Four Military Occupational Specialties, by Thomas G. Sticht, John S. Caylor, Richard P. Kern, and Lynn C. Fox, Technical Report 71-23, 72 pp., November 1971. AD-736 865 ED-059 028

This report describes results of research on the extent of usage of job printed materials and job listening sources as a function of the reading difficulty level of the materials and the reading ability of Army job incumbents. Psychometric data were obtained on relationships of reading ability to performance on Job-Related Reading Task tests, and of reading, listening, arithmetic, and AFQT to job proficiency as indexed by Job Knowledge tests, Job Sample tests, and Supervisor Ratings in four Army jobs. Methods are discussed for reducing discrepancies between personnel literacy skill levels and the literacy demands of the job by remedial literacy training or redesign of job literacy materials. Research results are discussed with regard to implications for selection, training, and research.

"Project REALISTIC: Determination of Adult Functional Literacy Skill Levels," by Thomas G. Sticht, John S. Caylor, Richard P. Kern, and Lynn C. Fox, *Reading Research Quarterly*, vol. VII, Spring 1972, pp. 424-465; issued as Professional Paper 20-72, 43 pp., September 1972. AD-755 293

This paper describes data gathered on functional literacy levels for four selected Army jobs: Cooks, Vehicle Repairmen, Supply Clerks, and Armor Crewmen. The data showed that reading difficulty levels in the Repairman and Supply fields exceeded the reading ability of high aptitude men by four to six grade levels, that use of reading materials increased as skill in reading increased, that men in high-demand reading level fields tended to listen for information, and that information on tests, job performance, supervisor's ratings showed positive, significant correlations between literacy variables and the first two indices of job proficiency. Listening and job knowledge were less highly related than reading and job knowledge.

"Mental Aptitude and Comprehension of Time-Compressed and Compressed-Expanded Listening Selections," by Thomas G. Sticht, *Journal of Auditory Research*, vol. 10, 1970, pp. 103-109; issued as Professional Paper 6-72, 11 pp., March 1972. AD-743 274 ED-066 080

The comprehensibility of materials compressed and then expanded by means of an electro-mechanical process was tested with 280 Army inductees divided into two groups of high- and low-mental aptitude. Three short listening selections relating to military activities were subjected to compression and compression-expansion to produce seven versions. Data indicate that expanding previously compressed materials to restore the word rate to normal may restore the comprehension of the material to very near normal when the compression/expansion is limited to 40%. Present results substantiate findings that factors limiting the comprehensibility of rapid speech reside more with the inability of the listener to process rapid rates of speech than with the signal distortion produced by the equipment or compression process.

"Effects of Speech Rate, Selection Difficulty, Association Strength and Mental Aptitude on Learning by Listening," by Thomas G. Sticht and Douglas R. Glasnapp, *The Journal of Communication*, vol. 22, no. 2, June 1972, pp. 174-188; issued as Professional Paper 1-73, January 1973. AD-762 692

In two factorial experiments, adult male Subjects, aged 18-25, listened to tape-recorded passages presented at different rates of speech. Experiment 1 studied the effects of speech rate upon immediate retention, by a total of 204 high and low aptitude (AFQT) men, of material having readability of grade levels 6.0, 8.5, and 14.5. Low aptitude men learned the easier material better than the difficult material as a function of decreased speech rate; high aptitude men appeared to learn material best at around 175 wpm, independent of difficulty. Experiment 2 examined interactions of speech rate, aptitude, and the association strength of nouns in sentences on immediate retention, using a total of 138 men. High aptitude men lost disproportionately more material of low association strength than did low aptitude men when the speech rate was increased from 175 to 325 wpm.

RELAY—Division No. 7 (Social Science)

The Impact of Military Service on Occupational Aspirations and Development of Skills (Research for the Department of the Air Force, Aerospace Medical Division)

Recruits' Civilian-Acquired Skills: Their Potential Value and Their Utilization in Initial Military Assignments, by Arthur J. Hoehn, Thurlow R. Wilson, and John A. Richards, (HumRRO TR 72-6), Technical Report AFHRL-TR-72-16, Manpower Development Division, Air Force Human Resources Laboratory, Air Force Systems Command, 129 pp., February 1972. AD-748 326

The objective of the research reported here was to assess the potential value and the utilization of recruits' civilian-acquired skills. A recruit was defined as having a military-relevant civilian-acquired skill if he had had six months or more of job experience in any of 67 common civilian jobs. The research data were obtained during March through June 1971 for four services: Two Army sites, one each for Navy, Marine Corps, and Air Force. Data were collected by administering questionnaires to recruits; obtaining judgments of classification interviewers; and extracting information on initial military assignment, enlistment commitment, and AFQT scores from official records. Results indicate about 40% of the entering personnel surveyed met the civilian-acquired skill (CAS) criterion. Job skills varied, but tended to concentrate in a few civilian job categories. Results suggest that 20-30% of the incoming personnel with six or more months of military-relevant work experience received assignments likely to make significant use of such experience.

Recruits' Military Preferences and Their Accommodation by the Military Services, by Arthur J. Hoehn, Thurlow R. Wilson, and John A. Richards, (HumRRO Technical Report 72-10), Technical Report AFHRL-TR-72-19 (in press), Manpower Development Division, Air Force Human Resources Laboratory, Air Force Systems Command, 121 pp., March 1972. AD-749 884

The principal objective was to provide information on recruits' military occupational preferences, match of military assignments to recruits' preferences, and changes that occur in these preferences between service entry and completion of basic training. Questionnaires were administered to recruits from four services just before classification interviewing and eight weeks later after initial military assignment. Small proportions of recruits' first choices were found to coincide with initial assignments in terms of DOD Occupational Groups. However, over 60% received assignments to DOD Occupational Areas to which they gave relatively high interest ratings. Perhaps, for this reason, most men expressed satisfaction with their initial assignments. Recruits considered the services did relatively well in getting and using information on aptitudes and educational background, but not so well on getting and using information on preferences and preservice work. Recruits need improved knowledge of the military work areas.

Recruits' Postservice Occupational and Educational Plans: Nature and the Extent of Influence From Early Military Experience, by Arthur J. Hoehn, (HumRRO Technical Report 72-15), Technical Report AFHRL-TR-72-28, Manpower Development Division, Air Force Human Resources Laboratory, Air Force Systems Command, 61 pp., April 1972. AD-750 145

Data on the nature of recruits' postservice occupational and educational plans, and on the influence that the first few weeks of military service have on such plans, were collected in March-June 1971 at Army, Navy, Marine Corps, and Air Force sites. One questionnaire was administered at the beginning, and one near the end of basic training. Results show that most recruits planned to be working full-time one year after service, but were uncertain as to the type of work they would be doing. The data suggest that 30-40% of the men considered their initial assignment out of line with their job plans for one year after service. Results on occupational plans for age 35 closely paralleled those for one year after service, but the men seemed to be more definite about the kind of work they would be doing. About 40% said that they planned to be attending college one year after leaving service. Results generally showed early service experience to have little, if any, impact on postservice vocational and educational plans.

Postservice Occupational and Educational Plans of First-Tour Military Personnel Nearing Separation From the Service, by Arthur J. Hoehn, (HumRRO Technical Report 72-19), Technical Report AFHRL-TR-72-42, Manpower Development Division, Air Force Human Resources Laboratory, Air Force Systems Command, 158 pp., June 1972.

A study was made of several aspects of the postservice educational and occupational plans for first-tour enlisted personnel nearing separation from military service. A questionnaire was administered at Air Force, Army, Marine Corps, and Navy sites. Analyses were made of the postservice plans of the respondents. Although most men expect to pursue full-time work, results show a widespread interest in further training or education. Only about one of four men expected to use his military job training experience, whether in a civilian job or in related education or training. Results suggest the need for continued, or even improved, pre-separation counseling to assist men in formulating their postservice plans, in locating jobs, and in becoming more aware of the potential value of the job skills they have acquired while in military service.

RETURN—Division No. 2
Prerelease Indicators for Military Prisoners
(Research for the Department of the Army)

A Partially Annotated Bibliography on Prediction of Parole Success and Delinquency, by Robert L. Dyer and James H. Harris, Research Product RP-D2-72-1, March 1972. AD-755 507

SIAF—Division No. 4

Selection and Training for Small Independent Action Forces (Research for Advanced Research Projects Agency)

Selection and Training for Small Independent Action Forces: Development of Materials and Procedures, by Joseph A. Olmstead, Theodore R. Powers, James A. Caviness, and Jeffery L Maxey, Technical Report 71-17, 56 pp., August 1971. AD-737 709 ED-060 437

This report of Phase II of a three-phase research and development project describes the completion of the systems analysis and specification of the critical knowledges and skills required for Small Independent Action Forces (SIAF) performance, and development of 19 Program Descriptions—training procedures and materials for developing the required knowledges and skills. (Program Descriptions had been developed in Phase I for 6 other content areas.) In addition, there is a description and provisional evaluation of a test battery for the selection of SIAF personnel. From a survey of current practices and job analysis data, candidate predictor variables were specified and instruments to measure the variables were identified or developed. Criterion tests of SIAF performance were developed for Phase III validation of selection procedures.

Selection and Training for Small Independent Action Forces: Final Report, by Joseph A. Olmstead, James A. Caviness, Theodore R. Powers, Jeffrey L. Maxey, and Fred K. Cleary, Technical Report 72-2, 62 pp., February 1972. AD-737 709 ED-060 437

The overall objective of this research was the development of procedures for selecting and training personnel to serve in Small Independent Action Forces (SIAF) units. This report of Phase III of the three-phase research and development project describes research that required two almost completely independent activities: (a) development of a composite training test, and (b) validation of selection tests and final development of selection materials and procedures into a Small Independent Action Forces Selection Program. Training procedures and materials for developing the required knowledges and skills were developed in Phases I and II.

SKYFIRE—Division No. 5

Training Methods for Forward Area Air Defense Weapons (Research for the Department of the Army)

Studies on Reduced-Scale Ranging Training With a Simple Range Finder, by Michael R. McCluskey, Technical Report 71-24, 35 pp., December 1971 (SKYFIRE I). AD-740 163

Three experiments of reduced-scale stadimetric ranging training were conducted for a criterion range of 1500 meters. The observers for all studies were trained in a reduced-scale (1/48) environment with stadimetric or occlusion ranging aids. Two of the studies also included a full-scale performance test with jet aircraft. The ranging training method consisted primarily of immediate feedback that contained either qualitative or quantitative information. The results of these studies indicated that: (a) the type of feedback (qualitative or quantitative) given during training does not affect ranging performance, (b) the reduced-scale training appears to be valid for the incoming direction of flight but not for the outgoing, and (c) the ranging skill acquired during training did not transfer completely to the full-scale environment. However, performance in the full-scale environment was as accurate after 30 days as it was at the completion of training.

Attempts to Improve Visual Detection Through Use of Search Patterns and Optical Aids, by Robert D. Baldwin, Technical Report 73-3, 33 pp., February 1973. (SKYFIRE III) AD-758 056

The research objectives were to compare the visual detection abilities of observers equipped with low- and moderate-powered optical systems, and to compare the detection capabilities of observers using different techniques or strategies for searching extensive visual displays. Visual experiments were conducted in a scaled reduction of an aircraft detection situation, comparing observer results using optical aids and unaided vision; a general conclusion was that "sharp" eyes are the best visual detection aids. Several search patterns experiments compared unstructured and structured visual search for simulated aircraft targets. Fundamental characteristics of vision—visual acuity and field of view—appear to be the major sources of variance in acquiring visual targets.

SMMART—Division No. 2

Developing Criteria for the Selection of Methods and Media by Army Trainers
(Research for the Department of the Army)

The State of Knowledge Pertaining to Selection of Cost-Effective Training Methods and Media, by Ronald W. Spangenberg, Yair Riback, and Harold L. Moon, Technical Report 73-13, 133 pp., June 1973. AD-763 194 ED-078 295

Review and analysis of pertinent literature was the first step in research to develop criteria and procedures for optimal selection of cost-effective methods and media for use in Army training. The empirical data found in the review are insufficient as a basis for reliable selection of methods and media for specific training tasks. Also, existing methods-media selection procedures, training cost-analysis procedures, and suggested approaches for developing such procedures are inadequate for Army needs, although portions of some of these may be useful in developing procedures for Army use. Possible approaches for removing those inadequacies are discussed.

SOURCE—Division No. 4[1]

Organizational Factors in Work and Performance
(Research for the Department of Health, Education, and Welfare, Social and Rehabilitation Service)

"Working Papers No. 2—Organizational Structure and Climate: Implications for Agencies," by Joseph A. Olmstead, in *National Study of Social Welfare and Rehabilitation Workers, Work, and Organizational Contexts*, Department of Health, Education, and Welfare, Social and Rehabilitation Service (SRS), 73-05403, 187 pp., February 1973.

This report analyzes the literature concerned with the impact of the work context (i.e. structure and climate) on work, workers, and work performance, with special relevance for social welfare and rehabilitation agencies. It describes the properties common to all organizations, including structure, communication processes, and the motivational and attitudinal characteristics of personnel. The need to develop, and reward, good leadership is given special emphasis, since the quality of leadership available at all levels is crucial in determining the character of an agency's work context.

SPECTRA—Division No. 2

Evaluation Study of Counselor Training Program
(Research for the Department of Labor, Manpower Administration)

Bibliography for Curriculum Development in Counseling Skills for the Helping Professions, by Carol L. Seabright, Research Product D2-72-4, August 1972.

Bibliographic material was gathered during an evaluation of a special USTES Counselor Training Program designed to provide the equivalent of one year of full-time education in vocational counseling with special emphasis on the disadvantaged client. The references were collected from 23 Counselor Training Programs being conducted in colleges and universities across the country. They are cross-referenced by subject area, for use by academic staffs conducting counselor training programs, and by Employment Service staff members conducting in-service training programs and as background material for studies in vocational counseling.

[1] See also "Organizational Factors."

Evaluation of a Special Counselor Training Program Conducted by the United States Training and Employment Service, Part I: Administrative and Training Procedures, by William L. Warnick and Willard H. Pratt, Precis—Final Report and Final Report, MEL 73-01A, Contract No. 43-1-014-51, October 1972 (Spectra I). PB 214 532/4

This paper—the initial phase of a two-part evaluation of the Special Counselor Training Program—describes the administration and conduct of the various training programs. Findings are based upon data obtained from structured interviews with program personnel and trainees participating in 23 nationwide programs that were selected at random. Results indicate that the training programs have successfully met the educational purposes of the program. However, major problems exist, stemming mainly from the limited time and staff available at all ES levels and from the lack of explicit program procedures.

Evaluation of Special Counselor Training Program Conducted by the United States Employment Service, Part II: Job-Oriented Training and Assessment Model, by Ronald E. Kraemer, Samuel P. Hudson, Richard E. Kriner, and Donald F. Haggard, Precis—Final Report and Final Report, MEL 73-01B, Contract No. 43-1-014-51, November 1972 (Spectra II).

This report is the second part of a two-part evaluation of the Special Counselor Training Program. Work included the development of a job-oriented model for measuring trainee counseling effectiveness and a model for developing training programs that relates job requirements and training content. Data upon which these models are based were obtained primarily from a job/training survey of 697 entry-level counselors within the Employment Service. Report information can be used to design, develop, and evaluate ES entry-level counselor training—determining training needs, specifying the curriculum, and assessing training effectiveness.

SPECTRUM—Division No. 3
Development of Efficient Training for Soldiers of All Aptitude Levels (Research for the Department of the Army)

Aptitude Level and Performance on Intramodal and Intermodal Form Discrimination Tasks, by Gary Kress, Technical Report 73-7, 28 pp., March 1973. AD-758 874

This report presents the findings of research that compared high and low aptitude subjects on two form discrimination tasks that required both intramodal and intermodal functioning. In the first experiment, 20 high and 20 low aptitude Army trainees were required to make a simultaneous discrimination of nonsense forms, using vision and touch. The second experiment, with 30 high and 30 low aptitude men, introduced a delay period between the presentation of the standard and comparison stimuli. For the first experiment, results showed that the high aptitude subjects consistently performed more accurately and more rapidly. In the second experiment, low aptitude subjects again committed more errors, but took significantly less study time than the highs. Analysis of verbal reports showed that the majority of the high aptitude men used higher-order processing or learning strategies, which enabled them to make more accurate matches.

Instructional Strategies for Training Men of High and Low Aptitude, by Hilton M. Bialek, John E. Taylor, and Robert N. Hauke, Technical Report 73-10, 38 pp., April 1973 (SPECTRUM III). AD-760 408

This report deals with research conducted to provide information that can be used to improve training of men of widely differing aptitudes, especially for the Army's high-density combat and combat support Military Occupational Specialties (MOSs). The research involved (a) a series of laboratory studies, using systematic manipulation of learning variables, and (b) a strategy of optimization applied in an operational setting, testing out promising guidelines. As in previous studies, major differences were observed in the performance of high and low aptitude groups, with the greatest differences in tasks making more cognitive demands and the least in tasks using manipulative motor skills. For low aptitude men, arrangements that maximize personal interaction during instruction were generally best. High aptitude men can learn many tasks themselves, given the minimum information, directions, and standards.

STAR—Division No. 5
Aircraft Recognition Training
(Research for the Department of the Army)

Comparison and Evaluation of Printed Programs for Aircraft Recognition, by Elmo E. Miller and Arthur C. Vicory, Technical Report 71-22, 34 pp., October 1971 (STAR III). AD-739 521 ED-054 610

Several printed prototype programs for training visual aircraft recognition were developed and compared experimentally. One program produced an average score of 95% on a printed recognition test (the next closest group test had more than twice as many errors). The program also tended to take the least time to administer (about 15 minutes per aircraft). The training was in three phases: (1) Study of Multi-Image Cards (each showing several views of one aircraft, listing distinctive features); (2) Study of Paired Comparison cards (each showing two or three aircraft that are likely to be confused); (3) Study of Flash Cards (each showing one view of one aircraft—10 different cards for each aircraft). After each phase, tests with printed imagery were administered. The program should be feasible and effective for routine training.

Studies of Aircraft Recognition Training, by Paul G. Whitmore, William C. Rankin, Robert D. Baldwin, and Sandra Garcia, Technical Report 72-5, 48 pp., February 1972 (STAR I). AD-739 923

The research dealt with three problem areas: selection of the minimum number of views of each aircraft required for effective recognition training, determination of an appropriate exposure duration for test images, and determination of the relative emphasis needed on friendly and hostile aircraft to produce adequate identification performance. The uniformity of performance on a posttraining test was a function of the number and distribution of the views used in training and the similarity level of the aircraft. Differences in duration from one to five seconds were critical only for the most highly similar aircraft. Both friendly and hostile aircraft need to be given equal training emphasis.

STOCK—Division No. 1 (System Operations)
Development of Training Management Procedures for Different Ability Groups
(Research for the Department of the Army)

Self-Paced Advanced Individual Training (AIT) and Duty Assignment Procedures, by Harold Hunter and Harold Wagner, Technical Report 73-14, 37 pp., June 1973. AD 764 973

A study was made to (a) describe how self-paced Military Occupational Specialty (MOS) training affects the Army assignment system; (b) identify ways the existing assignment system can accommodate individualized instruction; and (c) suggest modifications to the assignment system to provide better integration of self-paced training with assignment procedures. Information on self-paced systems in the Army, Navy, and Air Force and on assignment policies and procedures at the Department of the Army and at local training bases was collected, through interviews, correspondence, and examination of relevant documents. Relationships between self-paced systems and the assignment system were analyzed to identify points of accommodation.

SYNTRAIN—Division No. 6 (Aviation)

Modernization of Synthetic Training in Army Aviation
(Research for the Department of the Army)

Transfer of Instrument Training and the Synthetic Flight Training System, by Paul W. Caro, paper for Fifth Naval Training Device Center and Industry Conference, Orlando, Fla., February 1972; issued as Professional Paper 7-72, 10 pp., March 1972. AD-743 155 ED-062 614

One phase of an innovative flight training program, its development, and initial administration is described in this paper. The operational suitability test activities related to a determination of the transfer of instrument training value of the Army's Synthetic Flight Training System (SFTS) Device 2B24. Sixteen active Army members of an Officer Rotary Wing Aviator Course who had completed primary training and 9 Instructor Pilots participated in the study. Instrument training was conducted in the SFTS on a proficiency basis. Aircraft checkrides were administered by independent evaluator personnel. Checkride times and grades showed that much of the training now conducted in aircraft could be conducted more efficiently on the ground.

Determining Training Device Requirements in Fixed Wing Aviator Training, by Paul W. Caro, Oran B. Jolley, Robert N. Isley, and Robert H. Wright, Technical Report 72-11, 59 pp., April 1972. AD-744 447 ED-064 593

All fixed wing pilot training programs at the U.S. Army Aviation School were studied in FY 1968 to determine whether training might be more effective through more use of synthetic flight training equipment and, if so, to specify main characteristics needed. Secondary objectives were to assist in developing low-cost devices for one course and to determine the probable cost-effectiveness of a commercially available device in another. A method was developed that identified specific and differential needs for synthetic equipment in each course and determined suitability of existing equipment. A generalizable, systematic method for determining requirements for synthetic training equipment in existing training programs resulted.

TESTAID—Division No. 5

Technical Assistance in the Design and Execution of JTF-2 Test 3.1/3.5
(Research for the Department of the Army)

"Tracer Observation for Air Defense Fire Control," by Robert D. Baldwin, *Air Defense Trends*, September 1970; issued as Professional Paper 13-72, 8 pp., May 1972. AD-755 121

Research to evaluate effectiveness of tracer observation as a fire control technique for gun-type air defense weapons is reported. It was found that the machine dynamics of weapon systems are not compatible with the type of dynamics displayed by aircraft in a tactical situation. Several illusions are associated with tracer observations; a gunner has difficulty in localizing a tracer with respect to the target because of limitations of stereoscopic vision and time delays in feedback information from tracers. Controlled firing tests to evaluate usefulness of tracer fire control are needed for various combinations of aircraft and weapon dynamics, and tracer firing frequency.

TRADE—Division No. 1 (System Operations)

A Study of Solid State Equipment Maintenance and Training Requirements
(Research for the Ford Motor Company, Automotive Assembly Division)

"Solid State Equipment Maintenance and Training Requirements, Phase I: Establishing the Data Base," by Robert C. Trexler, Consulting Report CR-D1-72-1, 163 pp., September 1972.

The objective was to establish a data base from which to develop training for electricians in troubleshooting and repair of solid state electronic controlled production line equipments. The work included analysis of equipment failure frequencies and criticalities; repair part support effectiveness histories; determination of electrical and electronic knowledges of employed tradesmen; team composition imposed by equipment; background training and experience. Integrated questionnaires were developed to get data from 20 assembly plants to augment on-site interviews and observations. To define the appropriate mix of skills and knowledges for the training program, a systems analysis of maintenance performance in the division was performed. Specific problems and possible solutions were identified.

TRAINMAN–Division No. 2

Development of an Instructional Program in Training Technology and Training Management (Research for the Department of the Army)

"Developing Performance Tests for Training Evaluation," by William C. Osborn, Professional Paper 3-73, 8 pp., February 1973, based on paper for CONARC Training Workshop, Fort Gordon, Ga., October 1971. AD-758 436 ED-077 934

This paper describes the major action points in the course of developing a test for training evaluation. The author gives a brief summary of the 14 action points he considers basic for a test developer, from job objectives to final specifications.

TYPETRAIN–Division No. 3

Development of Improved Army Typing Training Program and Materials (Research for the Department of the Army)

An Evaluation of Alternative Programs for Training Beginning Typists in the Army, by Morris Showel, Technical Report 72-33, 106 pp., November 1972. AD-755 501; ED-070 922

This report presents the results of research to develop an improved training program for Army typists, and the material needed to implement that program. The research was conducted at Fort Ord and Fort Knox. First, baseline learning curves were determined. Eight experimental programs then were examined, and the results of various modifications in training were compared with the baseline learning curves. The effect of selected training variables and training systems was evaluated, and the relationship between straight-copy typing and production-copy typing was explored. Several alternative revised training programs were field tested, and suggestions for revising the training program now in use were made.

UTILITY–Division No. 3

Study of Men in Lower Mental Categories: Job Performance and the Identification of Potentially Successful and Potentially Unsuccessful Men (Research for the Department of the Army)

Performance in Four Army Jobs by Men at Different Aptitude (AFQT) Levels: 3. The Relationship of AFQT and Job Experience to Job Performance, by Robert Vineberg and Elaine N. Taylor, Technical Report 72-22, 144 pp., August 1972. AD-750 603 ED-072 110

To provide information on performance and characteristics of effective and ineffective marginal personnel in the Army, a study has been made of approximately 1500 men with experience ranging up to 20 years in four different Army MOSs. The study included a group of men with Armed Forces Qualification Test scores in the marginal range and a comparison group of men in the same jobs, but in the upper AFQT levels. This report, the third in a series, describes the bulk of the major study findings including comparisons of the performance of men in different mental categories with different amounts of job experience, comparisons of the performance of special subgroups (Negroes and Caucasians, inductees and enlistees, and men with formal and on-the-job training), an analysis and definition of acceptable performance, and a procedure for using Job Knowledge tests to screen ineffective performers.

Performance in Four Army Jobs by Men at Different Aptitude (AFQT) Levels: 4. Relationships Between Performance Criteria, by Robert Vineberg and Elaine N. Taylor, Technical Report 72-23, 35 pp., August 1972. AD-750 604

A study was made of approximately 1800 men with experience ranging to 20 years in five different Army MOSs to provide information about the performance and characteristics of effective and ineffective marginal personnel in the Army. The study included a group of men with Armed Forces Qualification Test scores (AFQT) in the marginal range and a comparison group of men in the same jobs, but in the upper range of AFQT scores. Performance was measured by intensive job sample tests, job knowledge tests, and supervisor ratings. Biographical questionnaires, a battery of published and experimental tests, and Army records provided information about background, personal characteristics, and military experiences. This report, the fourth in a series presenting the extensive data and analyses, examines the determinants of job behavior and describes the relationships among the three performance criteria used in the study: job sample tests, job knowledge tests, and supervisor ratings.

"The Interchangeability of Job Sample Tests and Job Knowledge Tests in Four Army Jobs," by Robert Vineberg and Elaine N. Taylor, paper for American Psychological Association Convention, Honolulu, Hawaii, September 1972.

Extensive job sample tests and multiple choice job knowledge tests were administered to approximately 370 men in each of four Army jobs: Armor Crewman, Repairman, Supply Specialist, and Cook. Representative tasks in each job were analyzed and skill requirements were identified. This analysis and the correlations between job sample scores and job knowledge scores supported the proposition that knowledge tests are valid for measuring proficiency in jobs where skill components are minimal and where knowledge tests are carefully constructed to measure only information that is directly relevant to the performance of that job.

VOLAR—Division No. 3

Support of the Army's Field Experimentation of Service Attractiveness and Training Programs (Research for the Department of the Army)

"The Experimental Volunteer Army Training Program, A Pictorial Report," Research Product, January 1972.

This pictorial report provides a brief explanation of the HumRRO effort in developing and evaluating an Experimental Volunteer Army Training Program (EVATP). A performance-oriented system designed to minimize the learning lag caused by individual differences found in any large group of learners was developed. Under this concept, all trainees are challenged; the slow learners and those with language barriers succeed, and those with high aptitude have ample opportunity to progress rapidly while being provided the incentive of helping fellow students. The emphasis is on each individual learning those specific skills and knowledges he will actually need to perform a task. Each man must perform each skill in such a manner as to show complete mastery before he passes on to another facet of instruction.

The Concepts of Performance-Oriented Instruction Used in Developing the Experimental Volunteer Army Training Program, by John E. Taylor, Eugene R. Michaels, and Mark F. Brennan, Technical Report 72-7, 62 pp., March 1972. AD-743 851 ED-064 588

This report describes the planning and implementing of the Experimental Volunteer Army Training Program (EVATP) at Fort Ord early in 1971. This was the Army's first effort to effect major training innovations in the conversion toward an all-volunteer Army. By the fall of 1971, this program was being used as a model for implementing the EVATP at other Army Training Centers. In developing the EVATP system, six established learning principles were applied to Basic Combat Training and Advanced Individual Training to modify the conventional training system. Course objectives and performance tests used were developed jointly by Fort Ord and HumRRO. In a comparison with a conventionally trained group, independently conducted by the Infantry School at Fort Benning, EVATP graduates performed significantly better on five out of seven BCT subjects, and seven out of nine AIT subjects. In general, these gains were shown by men at all levels of aptitude.

Summary and Review of Studies of the VOLAR Experiment, 1971: Installation Reports for Forts Benning, Bragg, Carson, and Ord, and HumRRO Permanent Party Studies, by Robert Vineberg and Elaine N. Taylor, Technical Report 72-18, 106 pp., May 1972. AD-744 449 ED-068 742

One purpose of Project VOLAR, a field experiment conducted during FY 1971 as part of the Modern Volunteer Army (MVA) program, was to evaluate the effects of VOLAR innovations on attitudes toward the Army and the Army career intentions of officers and enlisted men. This report provides an evaluative summary and consolidation of findings in several studies that focused upon permanent party officer and enlisted personnel. It encompasses (a) evaluations conducted by each VOLAR installation—Forts Benning, Bragg, Carson, and Ord—and described in their post reports, and (b) the HumRRO studies of permanent party personnel at Forts Benning, Carson, Jackson, Knox, and Bragg and at three installations in USAREUR, and of an Army-wide sample. Recommendations for future action are made, based on findings concerning conditions that appear to be important to men in making the Army a more satisfactory place in which to work and live.

Attitudinal Studies of the VOLAR Experiment: Permanent Party Personnel, 1971, by S. James Goffard, James S. DeGracie, and Robert Vineberg, Technical Report 72-25, 228 pp., August 1972. AD-752 103

One purpose of Project VOLAR, a field experiment conducted during FY 1971 as part of the Modern Volunteer Army (MVA) program, was to evaluate the effects of VOLAR innovations on attitudes toward the Army and Army career intentions of officers and enlisted men. In this report, data are discussed from questionnaires administered to random samples of permanent party officers and enlisted men (a) at Forts Ord, Jackson, Benning, Carson, and Knox; (b) at Fort Bragg and three posts in USAREUR; and (c) in an Army-wide (except Southeast Asia) sample. The questionnaires covered backgrounds, attitudes, plans for the future, and evaluations of possible VOLAR innovations. The analyses of the data are discussed.

"Need Functioning at Four Stages in Military Service," by Elaine N. Taylor, Robert Vineberg, S. James Goffard, and James S. DeGracie, paper for American Psychological Association Convention, Honolulu, Hawaii, September 1972.

Changes and constancies in the importance of 57 situations and conditions in four stages of Army life are presented and interpreted following Maslow's analysis of the functioning of human needs. Ratings of importance were transformed to z-scores and plotted. Three patterns were observed. It is suggested that: (a) items remain stable because other prepotent needs are less well satisfied; (b) items decrease in importance because they are being met to some degree or they were overestimated initially; (c) items increase in importance because they have been satisfied over a long time and are initially underestimated.

Attitudinal Studies of the VOLAR Experiment: Men in Training, 1971, by S. James Goffard, James S. DeGracie, and Robert Vineberg, Technical Report 72-31, 162 pp., October 1972. AD-753 599

One purpose of Project VOLAR, a field experiment conducted during FY 1971 as part of the Modern Volunteer Army (MVA) program, was to evaluate the effects of innovations under the program. In this report, data are discussed from the three questionnaires—VOLAR I, II, and III—that were administered to men during BCT and AIT at two posts (Forts Ord and Jackson). Included are substudies of (a) attitudes and absenteeism, (b) attitudes of a Midwestern sample, and (c) attitudinal effects of acceleration in the BCT cycle at Fort Jackson.

Attitudinal Studies of the VOLAR Experiment: A Longitudinal Study, 1971-72, by S. James Goffard, James S. DeGracie, and Robert Vineberg, Technical Report 73-6, 23 pp., March 1973. AD-758 873

One purpose of Project VOLAR, a field experiment conducted during FY 1971 as part of the Modern Volunteer Army (MVA) program, was to evaluate the effects of VOLAR innovations on attitudes toward the Army and Army career intentions of officers and enlisted men. A longitudinal study was conducted to determine whether the attitudes and reactions of men stationed at posts where programs of VOLAR innovations were continued on into 1972 were influenced by the presence or absence of VOLAR 71 programs at their previous duty or training station. The sample finally studied consisted of men who had taken one or more questionnaires while they were in training at either Ford Ord (a VOLAR training post) or Fort Jackson (a non-VOLAR training post) sometime between January and June 1971, and were stationed at either Fort Bragg or Fort Benning in December 1971, when they took a final questionnaire.

WIN I—Division No. 3
Analyses of WIN Team Functioning and Job Requirements
(Research for the Department of Labor, Manpower Administration)

Analyses of WIN Team Functioning and Job Requirements—Phase I: Duties and Tasks Performed by Teams and Team Members, by Richard P. Kern and John S. Caylor, Technical Report 71-19, 120 pp., August 1971. PB-202 811 ED-062 562

The team staffing patterns and the experience, education, and training backgrounds of the staffs of 51 WIN teams are described. Current team functioning is described for these teams in terms of how they proportion their time over the major duty areas identified in the Job Activities Inventory developed for this study. In addition, performance of each of the five basic team member positions is described in terms of how each proportions time over the duties and tasks performed. Performance of the respondents of each of these basic team member positions in tasks directly involved in caseload decision making is identified.

Analyses of WIN Team Functioning and Job Requirements, Final Report—Duties Performed and Style of Functioning, in Relation to Team Effectiveness, by Richard P. Kern, Technical Report 72-12, 151 pp., April 1972.

Data collected from WIN Employability Development Teams were used to describe team functioning in terms of two major variables: style of functioning in arriving at client-oriented decisions, and in extent to which distribution of job duty effort among team members emphasizes duty area specialization by job position title. Data were analyzed for relationships between team experience, training, and staffing characteristics and the two style of functioning variables; relationships between the two style of functioning variables and criteria of accomplishment of team communication and coordination objectives and criteria of accomplishment of program services and successful enrollee outcome. Recommendations are made regarding team staffing and in-service training based upon data presented in this report and the preceding Phase 1 report.

WIN II—Division No. 2

Development of Guidelines for the WIN Orientation Program with Emphasis on Training in Vocational Assessment
(Research for the Department of Labor, Manpower Administration)

Development of a Program of Instruction for WIN Employability Orientation, by William C. Osborn, G. Gary Boycan, and Donald F. Haggard, Technical Report 72-3, 180 pp., February 1972. PB-210 090 ED-060 442

This report describes the development of a flexible model program of instruction that included curriculum elements, training objectives, instructional methods and procedures, and measures for evaluating both individual trainee needs and training achievement of Work Incentive Orientation Training. The research is part of an effort to prepare unemployed people for job entry. The instructional program covers 18 major areas of employability orientation; a small study of the effectiveness of training in one of the areas—vocational assessment—is reported herein.

An Instructional Program for Employability Orientation, by William C. Osborn, Donald F. Haggard, G. Gary Boycan, Ronald W. Spangenberg, John D. Engel, and Willard H. Pratt, Technical Report 72-4, 306 pp., February 1972. PB-207 395 ED-064 491

In the research reported here, specific guidelines that were developed for a national WIN (Work Incentive Program) orientation program are described. Included are enrollee training objectives, an outline of suggested course content for 18 modules of relevant areas of skills and knowledges, tests of enrollee performance, and recommended methods of presenting various subject matters. There are also extensive lists of references and sources of information to aid instructors in preparing lesson plans and courses.

EXPLORATORY RESEARCH

(Research for the Department of the Army)

Exploratory Research 79—Division No. 1 (System Operations)
Reducing Errors in Logistics ADP

Reduction of Problems in Implementing and Utilizing Automatic Data Processing Systems in Logistics, by Francis L. Hibbits and C. Dennis Fink, Technical Report 72-27, 86 pp., October 1972. AD-905 207L

This exploratory research studied the factors that cause high error rate in ADP logistics systems in the Army in the field and explored the feasibility of conducting research that would attempt to identify and to remove the impact of those factors which seem to be associated with high error rates. The implementation of the (DLOGS) Class IX Repair Parts Supply System in the 24th Infantry Division (Fort Riley, Kansas) was used as the vehicle for field analysis. Data were collected by interview and questionnaires from division personnel involved in the system implementation and operation. A literature search was made, and relevant research projects and directives were reviewed.

Exploratory Research 83—Division No. 5
GED Program for the Army

Relationship of Education Level to Capabilities and Attitudes of Young Enlisted Men, by William H. Melching, David Orme-Johnson, Paul G. Whitmore, and William J. Given, Technical Report 72-29, 31 pp., October 1972. AD-753 597

To obtain information about problems of adaptation common to undereducated men, and to obtain information about knowledges and skills such men may not have, an achievement test/attitude questionnaire was administered to a large group of enlisted men. The instrument was designed to assess men's attitudes and skills with respect to financial, health, insurance, legal, and interpersonal problems. Men who took the test ranged in education level from less than 8 years to over 16 years. Higher educated men performed significantly better on the achievement test than did lower educated men, but high school dropouts (education level 9-11 years) consistently scored lowest of all. When attitude scale items were categorized as reflecting good vs. poor attitudes, poor attitudes decreased as education level rose. The results showed a strong correlation between errors on the achievement test and percentage of poor attitudes.

Exploratory Research 88–Division No. 4[1]
Countermine and Boobytrap Training

A Study of Factors Affecting Mine and Boobytrap Detection: Subject Variables and Operational Considerations, by Jeffery L. Maxey and George J. Magner, Technical Report 73-12, 44 pp., June 1973. AD-769 635

Tests were administered to and interviews conducted with military personnel identified as expert mine and boobytrap detectors, in exploratory research designed to develop methodology for identifying the characteristics of and describing the techniques used by such personnel. Only two of the psychological, ability, aptitude, and interest variables studied were significantly related to rated expertise in detection, so these variables may not play an important role in detection performance. None of the background information variables had any apparent relationship to expertise. Identifying highly proficient detectors on the basis of non-experiential variables is not likely to be successful, but it may be possible to identify these individuals on the basis of experience-oriented data.

[1] Work Unit COUNTERMINE was initiated as a result of ER-88.

BASIC RESEARCH STUDIES

(Research for the Department of the Army)

Basic Research 16—Division No. 5
Improving Ability to See Military Targets

"Perceptual Style and Detection of Motion in Depth," by William H. Ton, *Perceptual and Motor Skills*, vol. 34, 1972, pp. 423-428; issued as Professional Paper 9-72, 8 pp., April 1972. AD-743 275

Data reported indicate persistent individual differences in the detection of motion in depth—whether an object is approaching or receding. This finding stimulated the hypothesis that "perceptual style" might be the source of at least some of this variance, particularly as regards the detection of slowly moving or distant objects. In a test of this hypothesis, the findings did not yield a significant interaction of perceptual style with rate of movement. However, there was a difference ($p<.12$) in detection times between the two groups who differed with regard to perceptual style. It was hypothesized that this was due to a cautious, slow approach to detection tasks on the part of field-dependent individuals.

"Rate of Apparent Magnification as a Cue to Distance: Laboratory Investigation," by William H. Ton, *Perceptual and Motor Skills*, vol. 35, 1972, pp. 283-288; issued as Professional Paper 19-72, August 1972. AD-755 599

A laboratory study was conducted to determine the extent to which an observer can use magnification of an unknown object as a reliable cue to its range or distance. "Perceptual style" was used as a source of variance. It was concluded that, when both initial sizes and high and low velocity were presented, size alone was used to determine judgment of distance, although rate of magnification as a primary cue to distance cannot be eliminated on the basis of the present experiment.

Capabilities of Ground Observers to Locate, Recognize, and Estimate Distance of Low-Flying Aircraft, by Robert D. Baldwin, Technical Report 73-8, 50 pp., March 1973 (BR-16). AD-758 875

A considerable amount of research has been conducted during the past 10 years concerning the abilities of ground observers to detect, recognize, and estimate the range of aircraft. This report integrates and evaluates the results of 20 technical reports concerning these abilities. The effects on visual detection and recognition of visual aids, search sectors, target altitudes, and search methods are discussed. The techniques used for training in aircraft recognition are reviewed for historical origins and research validity. The accuracy of ground-to-air range estimation is described for unaided and stadimetric (size-distance) methods. Techniques of training range estimation in miniaturized situations are described. The influence of environmental factors on estimation accuracy is examined.

Basic Research 19—Division No. 6
Definition of Learning Variables

"The Complex Intellect vs. the I.Q. Test as a Predictor of Performance," by James W. Dees, paper presented at Mid-South Educational Research Association meeting, New Orleans, November 1972. ED-072 102

Officer candidates at Fort Benning, Ga., participated in a battery of 37 tests to determine the impact of J.P. Guilford's structure of the intellect on skills not usually associated with intelligence. A psychomotor skill, a measure of perseverance, and a measure of leadership ability were selected as criteria on which multiple regressions were conducted. Results showed that, in contrast to general intelligence tests, multiple regressions based on tests of intellectual factors are successful in predicting non-academic performance.

TECHNICAL ADVISORY SERVICE
(Research for the Department of the Army)

"Target Detection in the Field," by Jeffery L. Maxey and James A. Caviness, paper for 79th annual meeting of American Psychological Association, Washington, D.C., September 1971; issued as Professional Paper 11-72, 6 pp., May 1972. (Div. 4) AD-742 158

A factorial experiment was designed to determine (a) whether a negative exponential target detection model was adequate for describing the detection of moving human targets by stationary observers, and (b) whether the observer's detection behavior was affected by target speed, target-to-observer range, or the terrain in which the target appeared. Ninety Army enlisted men detected moving human targets in three different types of terrain. Analysis showed that the negative exponential model did not adequately describe the men's detection behavior, but that target speed, target-to-observer range, and the terrain in which the target appeared significantly affected their detection times.

Target Detection and Range Estimation, by James A. Caviness, Jeffery L. Maxey, and James H. McPherson, Technical Report 72-34, 41 pp., November 1972. (Div. 4) AD-753 600

A study of target detection times for human targets in various field situations was conducted to obtain data for the Army Small Arms Requirements Study (ASARS). Three significant variables—terrain complexity, target speed, and target distance—and two randomized control variables (direction of movement and starting position) were studied. Results indicate that terrain complexity and target range were positively related to detection time; target speed was negatively related. Examination of the 24 detection-time distributions suggests that the underlying probability distribution for the detection-time distributions was not exponential in form.

Relationship Between Recognition Range and the Size, Aspect Angle, and Color of Aircraft, by Robert D. Baldwin, Technical Report 73-2, 18 pp., February 1973. (Div. 5) AD-758 870

Reduced-scale field tests were conducted using 1/72nd scale model aircraft to estimate the relationship between aircraft size (presented area) and recognition range by ground observers equipped with binoculars. The overall size, color, and aspect angle (view) of the models were varied. The observers were highly trained and well-motivated members of the military and civilian research staff. The average recognition ranges and accuracy levels obtained far exceeded previously published data, being in the realm of detection ranges. The dark grey models having a reflectance similar to camouflaged aircraft were recognized 1900 meters (full-scale) sooner than aluminum-colored models. Aspect angles affected recognition range, as did overall size. Trial-to-trial reliability was high for each view, but there was little consistency in the recognition ranges between different views.

GENERAL[1]

"Research in Military Training," by Meredith P. Crawford, in the *Encyclopedia of Education*, Crowell-Collier, vol. 6, 1971.

In more than 20 years of research and development for the Army, HumRRO found that training provided the most effective approach for attacking problems of motivation, morale, and leadership as well as those of instructional method and content. Much of the research has been concentrated on ways of improving individual performance, but considerable work has also been done on unit training, training for command and control, language and area training, training technology, and training management.

"System Concept in Education," by Robert G. Smith, Jr., in the *Encyclopedia of Education*, Crowell-Collier, vol. 8, 1971.

The system concept requires a clear statement of purpose and a proper integration of the system components to accomplish purposes efficiently. System development generally occurs in six stages: delineate purposes, identify constraints, identify functions, select components to carry out functions, assemble the system, measure to see whether the purposes have been accomplished. An instructional system is an integrated set of media, equipment, methods, and personnel performing functions to accomplish learning objectives.

Psychology in the Real World: A Perspective on Psychotechnology Today and Ten Years Hence, by William A. McClelland, Professional Paper 3-72, 9 pp., February 1972; based on paper for symposium at American Psychological Association convention, Miami Beach, Fla., September 1970. (Exec. Off.) AD-743 153

The pace of technological change, its impact and influence on human behavior, and predictions as to the state of psychotechnology in 1980 are discussed. The author deals with contributions of behavioral scientists working in military and industrial settings toward solving societal problems. Topics emphasized include the technology of teaching and learning, organizational processes and the design of organizations, and psychotechnology and public policy.

The General Concept of Managing for Educational Accountability by John E. Taylor and Robert G. Smith, Jr., Professional Paper 4-72, 8 pp., February 1972; based on paper for Western Regional Research Coordinating Unit Directors Conference, Squaw Valley, Calif., September 1970. (Div. 3 and Exec. Off.) AD-743 154 ED-066 789

The first section of the paper defines project accountability, presents background to the concept, and highlights current problems in the public school system. The paper is also concerned with assessment procedures that make provisions for accountability in (a) attainment of terminal objectives and (b) phase-by-phase conduct of a project in pursuit of terminal objectives.

Performance Measurement in Helicopter Training and Operations, by Wallace W. Prophet, paper for American Psychological Association convention, Washington, D.C., September 1971; issued as Professional Paper 10-72, 15 pp., April 1972. (Div. 6) AD-743 157 ED-064 576

For almost 15 years, HumRRO Division No. 6 has conducted an active research program on techniques for measuring the flight performance of helicopter trainees and pilots. This program addressed both the elemental aspects of flying (i.e., maneuvers) and the mission- or goal-oriented aspects. A variety of approaches has been investigated, with the stress on nonautomated techniques feasible for operational use. This paper describes the work and illustrates its application to and implications for training management, quality control, manpower resources management, and operational capability. Automated human performance monitoring in flight simulators and its implications for automated training is also described.

[1] Items in this section either are not directly related to specific elements of the research program, or are related to several elements.

"Army Training and Education in the '70s," by Howard H. McFann, paper for 17th Annual Army Human Factors R&D Conference, Fort Bragg, N.C., November 1971. (Div. 3)

This paper discusses occupational or MOS training at the individual training level, and the need for training personnel to be versed in existing instructional technology encompassing three general areas: (a) training content, (b) evaluation, and (c) the instructional system. Army trends and changes in the 70s will include an increased emphasis on developing and applying a technology for improving the evaluation of Unit performance, and the use of Units for aiding in worldwide civilian disasters and emergencies. There will be three kinds of educational activity: (a) for those who need it, remedial work in basic literacy skills; (b) development training; and (c) educational programs designed to further the attractiveness of the service.

"Some Current Issues in the Design of Flight Training Devices," by Wallace W. Prophet, Paul W. Caro, and Eugene R. Hall, 25th Anniversary *Commemorative Technical Journal*, November 1971, Naval Training Device Center, Department of the Navy; issued as Professional Paper 5-72, 11 pp., March 1972. (Div. 6) AD-743 270 ED-064 893

This paper develops the rationale that training equipment should be selected or designed to furnish what the student needs to know and to be able to do to perform successfully on the operational job. Several considerations relevant to training equipment design from the systems engineering standpoint are examined. Suggested design features based upon particular student learning needs and on student learning characteristics are presented. Training equipment design features for particular categories of training objectives and for levels of training (e.g., initial training of aviators vs. transition training) are considered. Also discussed is the criticality of the synthetic training program with respect to the total training engineering process.

"Individualized Training and the Training of Individuals," by William A. McClelland, paper for XVIIth International Congress of the International Association of Applied Psychology, Liege, Belgium, July 1971; issued as Professional Paper 24-71, 10 pp., December 1971. (Exec. Off.) AD-743 151

Two current instructional research efforts relating to the problem of an individual student's learning and personal needs are reported. Characteristics of individualized instruction (e.g., terminal course objectives, remedial materials, measurement procedures), administrative constraints (e.g., fixed time, cost of equipment, lack of skilled instructors), training strategies and goals are discussed. The APSTRAT research involves peer instruction and provides for self-pacing, rapid feedback, and practice. Project IMPACT is an effort to provide the U.S. Army with an effective, efficient, and economical computer-administered instructional system.

"Structural Coherence in Pictorial and Verbal Displays," by Ronald W. Spangenberg, *Journal of Educational Psychology*, vol. 62, no. 6, December 1971; issued as Professional Paper 2-72, 9 pp., January 1972. (Div. 2) AD-743 273

The effects of three levels of structural coherence within verbal and pictorial displays were examined. A nonsense syllable was associated with each item as the initial task; the second task was to learn 20 sentences successively presented on a memory drum. Initial learning showed significant superiority of pictorial over verbal groups. Initial learning of displays showing overall structural coherence provided significant improvement in learning the transfer task, as did initial learning of pictorial displays. These results relate both to the design of instructional displays and inferences concerning mental operations.

"Voluntary Inhibition of Galvanic Skin Response," by William H. Ton and John R. Boulger, *Psychological Reports*, vol. 29, 1971, pp. 603-606; issued as Professional Paper 23-71, 6 pp., December 1971. (Div. 5) AD-743 272

An experiment was designed to assess the effectiveness of instructional set in voluntary inhibition of Galvanic Skin Response (GSR). Male subjects were assigned three treatment groups, each of which treated the problem under different instructions. Analyses of suppression are given.

"'If It Exists, It Can Be Measured'—But How?" by Eugene A. Cogan, paper for New York University First National Annual Training in Business and Industry Conference, New York City, March 1972. (Exec. Off.); included in Professional Paper 16-72, July 1972 (ED-069 736); also printed in *SRIS*, Summer 1973.

In making a job performance evaluation, anything that can be specifically defined can be measured. However, to develop a testing program that is both useful and cost-effective, it must be known who will make what decisions, using the obtained measurements. Analysis and interpretation of the particular purpose and setting are needed. Feedback data show how improved decisions can produce dollar gains far beyond the cost of developing and employing measurement.

"Measuring Effectiveness: Quality Control of Training," by J. Daniel Lyons, paper for New York University First National Annual Training in Business and Industry Conference, New York City, March 1972, (Div. 1); included in Professional Paper 16-72, July 1972. (ED-069 736).

In this paper, the essential elements of a quality control system are illustrated, including (a) training objectives or performance requirements, (b) proficiency and diagnostic measures, (c) data reduction and analysis, (d) procedures for decision and corrective action, (e) communication procedures, and (f) managerial support. It is shown that training goals must be defined in terms of measurable on-the-job performance.

"The Problems of Using Systems Approach in General Education," by Eugene R. Michaels, paper for California Association for Educational Media and Technology (CAIT) Convention, San Diego, Calif., March 1972. (Div. 3)

This paper discusses three preconditions for successful use of the systems approach in education: (1) there needs to be some objective and empirical means of deriving the goals of instruction; (2) the methods used to teach must be opened to fundamental reorganization so that full use can be made of the possibilities of all instructional media; (3) the objectives of an instructional system should be such that they can be realized within a relatively short time—weeks or months, rather than years.

"An Analysis of the Impact of VOLAR (Volunteer Army) Actions at Fort Benning," by T.O. Jacobs, paper for Psychology in the Air Force Symposium, U.S. Air Force Academy, Colorado Springs, Colo., April 1972. (Div. 4)

This paper describes an evaluation of the first year of experience at Fort Benning with actions designed to increase attractiveness of military service and thus decrease reliance on inductions (VOLAR). Through the use of a pre-VOLAR questionnaire, for baseline purposes, and periodic subsequent administrations, it was possible to assess VOLAR impact on career intentions and general attitudes toward the Army. VOLAR actions had greatest impact on soldiers' feelings about inequities, and less on needs for effective leadership, security, and pride in service. Soldiers' measured career intentions have increased systematically during the period of evaluation.

Frameworks for Measurement and Quality Control, Professional Paper 16-72, 15 pp., July 1972, based upon presentation at the New York University First National Annual Training in Business and Industry Conference, New York, March 1972; paper by Eugene A. Cogan, "'If It Exists, It Can Be Measured'—But How?" and paper by J. Daniel Lyons, "Measuring Effectiveness: Quality Control of Training." ED-069 736

The author of the first paper states that, in making a job performance evaluation, anything that can be specifically defined can be measured. However, to develop a testing program that is both useful and cost-effective, it must be known who will make what decisions, using the obtained measurements. Analysis and interpretation of the particular purpose and setting are needed. Feedback data show how improved decisions can produce dollar gains far beyond the cost of developing and employing measurement. In the second paper, the essential elements of a quality control system are illustrated, including (a) training objectives or performance requirements, (b) proficiency and diagnostic measures, (c) data reduction and analysis, (d) procedures for decision and corrective action, (e) communication procedures, and (f) managerial support. It is shown that training goals must be defined in terms of measurable on-the-job performance.

"The Army Officer as Behavior Manager," by John P. Fry, paper for American Psychological Association meeting, Honolulu, Hawaii, September 1972.

Contrary to common practice, an Army officer, trained in the behavioral sciences, used skills and techniques of contingency management, group problem solving, and performance counseling to manage an 800-man Army battalion. Even though personnel turnover was quite high, mission performance, esprit de corps, and junior officer retention rates exceed that of comparison battalions. Nonetheless, requiring subordinates to operate under conditions of less structure, more participation, and greater reliance on self-direction demanded not only great patience in overcoming initial fears, but a behavioral background which is not presently available to the Army officer.

"Selection Testing for Job Proficiency: Some Illustrated Empirical Problems in Assessing Fairness," by John S. Caylor, paper for symposium at American Psychological Association Convention, Honolulu, Hawaii, September 1972.

This paper analyzes the validity of a selection screening test for two job performance criteria for a majority and a minority segment of the population. Four hundred Army men—all of whom had taken the AFQT—were measured for job knowledge and job sample performance. Problems peculiar to selection testing were encountered: low-level and restricted range of screening scores for the minority group, and lack of data from those not hired. As one means of offsetting these factors, the author suggests obtaining regression data for pooled job occupants and examining separately the accuracy of predicted job success for different groups. This kind of local, empirical, and subpopulation validation is essential to the effective and equitable use of selection tests.

"Interactive Relationship Between Inquisitiveness and Student Control of Instruction," by John P. Fry, *Journal of Educational Psychology*, vol. 63, no. 5, October 1972; issued as Professional Paper 22-72, 9 pp., December 1972. PB-215 818

To determine the effect of student characteristics and student control on learning, three experimental variables (college aptitude, inquisitiveness, and student control) were combined in a 2 x 2 x 4 factorial arrangement. Videotape recording facilities were used to simulate a learner-computer environment, in which 192 college students were given degrees of control over the programming of their own learning. As expected, high-aptitude—high-inquiry subjects learned significantly more under a high degree of student control, and high-aptitude—low-inquiry subjects learned significantly more under a low degree of student control. Results for low-aptitude subjects were inconclusive. Overall, subjects learning under a high degree of student control learned the least. However, they formed the most favorable attitude toward the method of instruction.

"The Process of Effecting Change in Medical Education," by William A. McClelland, invited address at 11th Annual Conference on Research in Medical Colleges, Miami Beach, Fla., November 1972.

The author defines planned change and refutes a number of the more commonly held ideas about it. He describes those elements involved in the diffusion of change, such as the change itself, communications, the social system, and time. Factors that tend to inhibit or accelerate change are explored, as are the different levels of change and the characteristics of successful innovators. The author concludes by suggesting six steps for systematically implementing needed changes: diagramming the problem; formulating objectives; identifying constraints and needed resources; selecting potential solutions; evaluating alternatives; and implementing the selected alternatives.

"The Behavioral Model as a Tool for Analyzing 'Soft Skills'," by Paul G. Whitmore, paper for CONARC Soft Skills Conference, Fort Bliss, Tex., December 1972.

This report shows how the systems engineering process used for "hard" skills can be applied equally to "soft" skills. The process includes: (a) identifying the purposes of the system; (b) identifying a theory of operation for the equipment or people the workers will interact with and applying this theory to the purpose analysis, to produce a behavioral model of the job function; (c) identifying the characteristics of the work situation; and (d) applying the theory of operations to determine what the worker should do to attain the appropriate purposes in specific situations. This process provides a basis for designing job sample practice and testing procedures that will enable students in simulated job situations to practice specific skills, whether "hard" or "soft."

"Training Quality Control, the Evaluation of Leadership Skills," by T.O. Jacobs, paper for CONARC Soft Skills Conference, Fort Bliss, Tex., December 1972.

Problems in the development of leadership evaluation methods are discussed within the context of soft skills systems engineering itself. Problems include the difficulty of finding a "true expert," the general lack of clarity concerning ultimate criterion measures, and the fact that leadership skills are essentially disjunctive (as most other soft skills probably are). The paper agrees with Whitmore as to the value of the behavioral scientist, in soft skills systems engineering, but also cautions against (a) theoretical biases that may lead to misdirected work, and (b) misconceptions due to lack of experience as a line executive. Either may be counterproductive.

HumRRO's Literacy Research for the U.S. Army: Progress and Prospects, by Thomas G. Sticht, John S. Caylor, Lynn C. Fox, Robert N. Hauke, James H. James, Steven S. Snyder, and Richard P. Kern, briefing, U.S. Continental Army Command, October 1972; issued as Professional Paper 2-73, 31 pp., January 1973. AD-758 435 ED-073 369

This report summarizes literacy research performed in HumRRO Work Units REALISTIC, READNEED, and FLIT. Data are reported that show reading demands of various Army jobs, and reading ability levels of personnel prior to, during, and after Project 100,000. Research and development of a new job-related, functional literacy training program for the Army is described.

"Leadership and Organizational Effectiveness," by T.O. Jacobs, presentation to The Secretary of the Navy's Advisory Board on Education and Training, Pensacola, Florida, February 1973.[1] (Div. 4)

The relationship between the member of a military organization and the organization is seen as a two-level contract—at once formal and informal. A more or less formal contract governs the minimum each will accept from the other. An informal contract between the leader and the follower(s) governs the development of motivation to achieve much higher levels of goal attainment. Analysis of factor analytic studies shows that the four common expectations of the enlisted man are a need for pride in service and duty performed, security for self and family, equitable demands on him, and good leaders.

"Designing the Operator Into Highly Automated Systems," by Harry L. Ammerman and William H. Melching, *Instruments and Control Systems*, vol. 46, no. 3, March 1973.

Human factors considerations in determining overall systems design concepts revolve around six major performance issues: (a) manual roles must be significant in accomplishing system objectives, (b) training is necessary; (c) contingency operations should be defined, (d) all-level decision ranges must be established, (e) necessary decision-making information should be identified and available, and (f) control devices needed to implement decisions must be identified. The inclusion of these human roles in the system design can be facilitated by the use of position analysis, which may involve preparing a decision outline, drawing a matrix of information-decision relationships, and analyzing position activity across time.

[1] Presentation prepared under Contract N00014-67-A-0399-0006

APPENDICES

Appendix A

FY 72 AND FY 73 TECHNICAL REPORTS AND PROFESSIONAL PAPERS BY NUMBER[1]

Technical Reports

Fiscal Year 1972

71-16 *The Effects of a 48-Hour Period of Sustained Field Activity on Tank Crew Performance.* (ENDURE II).

71-17 *Selection and Training for Small Independent Action Forces: Development of Materials and Procedures.* (Research for Advanced Research Projects Agency) (SIAF)

71-18 *Preliminary Handbook on Procedures for Evaluating Mental Health Indirect Service Programs in Schools.* (Research for National Institute of Mental Health) (CONVAL)

71-19 *Analyses of WIN Team Functioning and Job Requirements.* (Research for the Department of Labor) (WIN I)

71-20 *Organizational Factors in the Performance of Social Welfare and Rehabilitation Workers.* (Research for the Department of Health, Education, and Welfare) (Organizational Factors)

71-21 *Project IMPACT—Computer-Administered Instruction: Preparing and Managing the Content of Instruction, IMPACT Text-Handling Subsystem.* (IMPACT)

71-22 *Comparison and Evaluation of Printed Programs for Aircraft Recognition.* (STAR III)

71-23 *Determination of Literacy Skill Requirements in Four Military Occupational Specialties.* (REALISTIC)

71-24 *Studies on Reduced-Scale Ranging Training With a Simple Range Finder.* (SKYFIRE I)

72-1 *An Occupational Clustering System and Curriculum Implications for the Comprehensive Career Education Model.* (Research for the Ohio State University) (BUCKEYE)

72-2 *Selection and Training for Small Independent Action Forces: Final Report.* (Research for Advanced Research Projects Agency) (SIAF)

72-3 *Development of a Program of Instruction for WIN Employability Orientation.* (Research for the Department of Labor) (WIN II)

72-4 *An Instructional Program for Employability Orientation.* (Research for the Department of Labor) (WIN II)

72-5 *Studies of Aircraft Recognition Training.* (STAR I)

72-6 *Recruit's Civilian-Acquired Skills: Their Potential Value and Their Utilization in Initial Military Assignments.* (Research for the U.S. Air Force) (RELAY)

72-7 *The Concepts of Performance-Oriented Instruction Used in Developing the Experimental Volunteer Army Training Program.* (VOLAR)

72-8 *Preliminary Findings From the 1971 DoD Survey of Drug Use.* (Research for Advanced Research Projects Agency) (DELTA)

72-9 *Analyses of Selected Drug-Related Topics: Findings From Interviews at Four Armed Service Locations.* (Research for Advanced Research Projects Agency) (DELTA)

[1] Research for the Department of the Army unless otherwise noted.

72-10 *Recruits' Military Preferences and Their Accommodation by the Military Services.* (Research for the U.S. Air Force) (RELAY)

72-11 *Determining Training Device Requirements in Fixed Wing Aviator Training.* (SYNTRAIN)

72-12 *Analyses of WIN Team Functioning and Job Requirements, Final Report—Duties Performed and Style of Functioning, in Relation to Team Effectiveness.* (Research for the Department of Labor) (WIN I)

72-13 *Driver Education Task Analysis: Task Analysis Methods.* (Research for the Department of Transportation) (DRIVER EDUCATION)

72-14 *Driver Education Task Analysis: The Development of Instructional Objectives.* (Research for the Department of Transportation) (DRIVER EDUCATION)

72-15 *Recruits' Postservice Occupational and Educational Plans: Nature and the Extent of Influence From Early Military Experience.* (Research for the U.S. Air Force) (RELAY)

72-16 *Training in Mechanized Stock Accounting Systems in Army Logistics* (ACCOUNT)

72-17 *Reenlistment Intentions of Tank Commanders.* (ESPRIT)

72-18 *Summary and Review of Studies of the VOLAR Experiment, 1971: Installation Reports for Forts Benning, Bragg, Carson, and Ord, and HumRRO Permanent Party Studies.* (VOLAR)

72-19 *Postservice Occupational and Educational Plans of First-Tour Military Personnel Nearing Separation From the Service.* (Research for the U.S. Air Force) (RELAY III)

Fiscal Year 1973

72-20 *Knowledge, Skills, and Thought Processing of the Battalion Commander and Principal Staff Officers.* (CAMBCOM)

72-21 *Project IMPACT Software Documentation: Overview of the Computer-Administered Instruction Subsystem.* (IMPACT)

72-22 *Performance in Four Army Jobs by Men at Different Aptitude (AFQT) Levels: 3. The Relationship of AFQT and Job Experience to Job Performance.* (UTILITY)

72-23 *Performance in Four Army Jobs by Men at Different Aptitude (AFQT) Levels: 4. Relationships Between Performance Criteria.* (UTILITY)

72-24 *The Development of Diagnostic and Remediation Materials for New-Hire Telephone Operators.* (Research for the American Telephone & Telegraph Company) (ATT-I)

72-25 *Attitudinal Studies of the VOLAR Experiment: Permanent Party Personnel, 1971.* (VOLAR)

72-26 *Gain in Student Achievement as a Function of Inservice Teacher Training in Classroom Management Techniques.* (Research for the River Rouge, Michigan, School District) (Educational Workshops)

72-27 *Reduction of Problems in Implementing and Utilizing Automatic Data Processing Systems in Logistics.* (ER-79)

72-28 *Development and Pilot Test of a Career-Oriented, Peer-Instructional Model in the Office Cluster of Business Occupations.* (Research for the Pacific Grove, California, Unified School District) (OFFICE-ED)

72-29 *Relationship of Education Level to Capabilities and Attitudes of Young Enlisted Men.* (ER-83)

72-30 *Effects of Information Load, Location, and Mode of Observation on Detecting and Identifying Brief Targets.* (NIGHTSIGHTS VI)

72-31 *Attitudinal Studies of the VOLAR Experiment: Men In Training, 1971.* (VOLAR)

72-32 *The Effects of Command Position Upon Evaluations of Leader Behavior.* (FORGE)

72-33 *An Evaluation of Alternative Programs for Training Beginning Typists in the Army.* (TYPETRAIN)

72-34 *Target Detection and Range Estimation.* (TAS)

72-35 *Development and Implementation of a Quality-Assured, Peer-Instructional Model.* (APSTRAT)

72-36 *A Plan for ULMS Weapon System Maintenance and Its Personnel Implications.* (Research for the Department of the Navy) (DOLPHIN)

72-37 *Combat Job Requirements for the Air Cavalry Aeroscout Pilot and Aeroscout Observer.* (AIRSCOUT I)

73-1 *The Prediction of AWOL, Military Skills, and Leadership Potential.* (ESPRIT)

73-2 *Relationship Between Recognition Range and the Size, Aspect Angle, and Color of Aircraft.* (TAS)

73-3 *Attempts to Improve Visual Detection Through Use of Search Patterns and Optical Aids.* (SKYFIRE III)

73-4 *Role of Selection and Growth in Performance of Experienced Men: Some Evidence From a Study of Four Army Jobs.* (FOLLOWTHRU)

73-5 *Methodologies for Determining Reading Requirements of Military Occupational Specialties.* (READNEED)

73-6 *Attitudinal Studies of the VOLAR Experiment: A Longitudinal Study, 1971-72.* (VOLAR)

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73-9 *A Comparison of Methods of Studying Illicit Drug Usage.* (MODE)

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73-11 *Educational Approaches to the Prevention of Non-Therapeutic Use of Drugs.* (PREVENT)

73-12 *A Study of Factors Affecting Mine and Boobytrap Detection: Subject Variables and Operational Considerations.* (ER-88)

73-13 *The State of Knowledge Pertaining to Selection of Cost-Effective Training Methods and Media.* (SMMART)

73-14 *Self-Paced Advanced Individual Training (AIT) and Duty Assignment Procedures.* (STOCK)

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16-71 *An Innovative Instrument Flight Training Program.* (SYNTRAIN)

17-71 *Systems Engineering of Coast Guard Aviator Training.* (Research for the U.S. Coast Guard) (AVTRAIN)

18-71 *Marginal Manpower: Job Capability as a Joint Function of Aptitude and Experience.* (UTILITY)

19-71 *Project REALISTIC: Evaluation and Modification of REAding, LIStening, and ArithmeTIC Needs in Military Jobs Having Civilian Counterparts.* (REALISTIC)

20-71 *Who Should Develop Instructional Materials for CAI?* (Research for the National Science Foundation and the James McKeen Cattell Fund) (NSF-IDM)

21-71 *Development and Evaluation of a Self-Instructional Spanish Course.* (AUTOSPAN)

22-71 *Psychology and/or Cybernetics as Basis for Instructional Strategy.* (IMPACT)

23-71 *Voluntary Inhibition of Galvanic Skin Response.* (General)

24-71 *Individualized Training and the Training of Individuals.* (General)

1-72 *Factors in Organizational Effectiveness.** (FORGE)

2-72 *Structural Coherence in Pictorial and Verbal Displays.* (General)

3-72 *Psychology in the Real World: A Perspective on Psychotechnology Today and Ten Years Hence.* (General)

4-72 *The General Concept of Managing for Educational Accountability.* (General)

5-72 *Some Current Issues in the Design of Flight Training Devices.* (General)

6-72 *Mental Aptitude and Comprehension of Time-Compressed and Compressed-Expanded Listening Selections.* (REALISTIC)

7-72 *Transfer of Instrument Training and the Synthetic Flight Training System.* (SYNTRAIN)

8-72 *The Process of Individualizing Instruction.* (Research for River Rouge, Michigan, School District) (Educational Workshops)

9-72 *Perceptual Style and Detection of Motion in Depth.* (BR-16)

10-72 *Performance Measurement in Helicopter Training and Operations.* (General)

11-72 *Target Detection in the Field.* (TAS)

12-72 *Patterns of Drug Usage Among Vietnam Veterans.* (Research for the Department of Defense) (MARS)

13-72 *Tracer Observation for Air Defense Fire Control.* (TESTAID)

14-72 *Perspectives on Simulation and Miniaturization.* (MARKSMAN)

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15-72 *Inservice Training for a New Function for School Psychologists* (Research for River Rouge, Michigan School District) (Educational Workshops)

16-72 *Frameworks for Measurement and Quality Control.* (General)

17-72 *Leadership and Social Exchange.* (Research for Office of Naval Research) (LEADREVIEW)

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20-72 *Project REALISTIC: Determination of Adult Functional Literacy Skill Levels.* (REALISTIC)

21-72 *Learning by Listening.* (LISTEN)

22-72 *Interactive Relationship Between Inquisitiveness and Student Control of Instruction.* (General)

1-73 *Effects of Speech Rate, Selection Difficulty, Association Strength and Mental Aptitude on Learning by Listening.* (REALISTIC)

2-73 *HumRRO's Literacy Research for the U.S. Army: Progress and Prospects.* (General)

3-73 *Developing Performance Tests for Training Evaluation.* (TRAINMAN)

4-73 *Theoretical Framework: Some Basic Issues Related to Methods and Media Selection.* (MEDIA)

5-73 *A Cultural Self-Awareness Approach to Improving Intercultural Communication Skills.* (COPE)

6-73 *A Career-Oriented, Free-Flow, Peer-Instructional System.* (Research for the Pacific Grove, California, Unified School District) (OFFICE-ED)

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- ATC-PERFORM
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- CAMBCOM
- COPE
- ENDURE
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- TESTAID
- TRAINMAN
- TYPETRAIN
- UTILITY
- VOLAR

Department of Defense
- MARS

Department of Health, Education, and Welfare
- CONVAL
- Organizational Factors
- SOURCE

Department of Labor
- ERC
- OSHA-COT
- SPECTRA
- WIN I
- WIN II

Department of the Navy
- DOLPHIN
- LEADREVIEW

Department of Transportation
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- AVCAD
- DOT-DE
- DOT-MC

Ford Motor Company
- TRADE

New York State Education Department
- NYSED-TO

The Ohio State University
- BUCKEYE

The Pacific Grove, California, Unified School District
- OFFICE-ED

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Xerox Corporation
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